

***Coronidium*, a new Australian genus in the Gnaphalieae (Asteraceae)**

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Abstract

Wilson, P. G. *Coronidium*, a new Australian genus in the Gnaphalieae (Asteraceae). *Nuytsia* 18: 295–329 (2008). The genus *Coronidium* Paul G. Wilson, a segregate of *Helichrysum* Mill. *sensu lato*, is described. It consists of 17 species, all of which are found in eastern Australia while two are also present in South Australia and one in Tasmania. Six species and two subspecies are described as new: *C. cymosum* Paul G. Wilson, *C. elatum* (A. Cunn. ex DC.) Paul G. Wilson subsp. *minus* Paul G. Wilson, *C. elatum* subsp. *vellerosum* Paul G. Wilson, *C. flavum* Paul G. Wilson, *C. fulvidum* Paul G. Wilson, *C. lanosum* Paul G. Wilson, *C. kaputaricum* Paul G. Wilson, and *C. telfordii* Paul G. Wilson, while *Helichrysum adenophorum* var. *waddelliae* J.H. Willis is raised to species rank as *C. waddelliae* (J.H. Willis) Paul G. Wilson; a further ten species are transfers from *Helichrysum*: *C. oxylepis* (F. Muell.) Paul G. Wilson, *C. rupicola* (DC.) Paul G. Wilson, *C. glutinosum* (Hook.) Paul G. Wilson, *C. lanuginosum* (A. Cunn. ex DC.) Paul G. Wilson, *C. newcastlianum* (Domin) Paul G. Wilson, *C. boormanii* (Maiden & Betche) Paul G. Wilson, *C. elatum* (DC.) Paul G. Wilson, *C. lindsayanum* (Domin) Paul G. Wilson, *C. adenophorum* (F. Muell.) Paul G. Wilson, and *C. scorpioides* (Labill.) Paul G. Wilson. Several names are lectotypified.

Introduction

The species discussed in this paper are endemic to eastern Australia with the exception of *Coronidium adenophorum* (F. Muell.) Paul G. Wilson whose distribution extends into south-eastern South Australia and *C. scorpioides* (Labill.) Paul G. Wilson which is also found in South Australia and Tasmania. All, except for those newly described, were previously included in *Helichrysum* Mill.

The genus *Helichrysum s.lat.* has long been recognised as polyphyletic and an outline of the taxonomic confusion within that genus was presented by Hilliard and Burtt (1981) and by Anderberg (1991). They indicated that *Helichrysum* is to be treated as a genus of Africa and Eurasia, although even in this restricted sense it appears to be polyphyletic. In Australia the genus as delimited by Bentham (1867) has been dismembered with the following genera recognised by Anderberg (1991) or accepted subsequent to his review: *Cassinia* R.Br. (1817), *Ozothamnus* R.Br. (1817), *Lawrencella* Lindl. (1839), *Chrysocephalum* Walp. (1841), *Gratwickia* F. Muell. (1895), *Xerochrysum* Tzvelev (1990) (syn. *Bracteantha* Anderb. & L. Haegi in Anderberg 1991), *Anemocarpa* Paul G. Wilson (1992), *Argentipallium* Paul G. Wilson (1992), and *Cremnothamnus* Puttock (1994). The genus *Helichrysum* has recently been re-instated for Australia with the recognition of *Gnaphalium luteoalbum* L. as *Helichrysum luteoalbum* (L.) Rchb. (Galbany-Casals *et al.* 2004).

Of the species discussed here, Candolle (1838) placed *Helichrysum rupicola* DC. (with *H. collinum* DC.) in sect. *Helichrysum* Mill. [sub-series] *Oxylepidea*, *H. elatum* DC. with *H. leucopsideum* DC. in sect. *Blepharolepis* DC. [informal group] *Argyrolepis* along with a number of other Australian species now referred to other genera, and *H. scorpioides* Labill. in sect. *Blepharolepis* [informal group] *Chrysolepis*.

Bentham (1867) raised *Helichrysum* ser. *Chrysolepidea* DC. subser. *Xerochlaena* DC. to sectional rank under *Helichrysum* and included in it *H. bracteatum* (Vent.) Willd., *H. scorpioides*, *H. rutidolepis* DC., those species referred below to the '*Xerochrysum leucopsideum*' group, and a number of other species now placed in other genera. He placed *H. oxylepis* F.Muell., *H. collinum*, and *H. rupicola* in *Helichrysum* sect. *Oxylepis* Benth. which therefore corresponded to Candolle's *Helichrysum* [sub-series] *Oxylepidea*.

Anderberg, *op. cit.* listed 22 Australian (and two New Zealand) species in a *Lawrencella* '*Scorpioides*' complex. Nine of these species are here included in a new genus *Coronidium*; they represent some that were listed by Bentham (1867) in *Helichrysum* sections *Xerochlaena* and *Oxylepis* and referred by Wilson (1992) to the '*Helichrysum elatum* group'.

Bayer *et al.* (2002) published a paper on the phylogeny of the Australian Gnaphalieae based on molecular data. This analysis did not include any of the species here placed in *Coronidium*.

Morphological data

Those morphological features that are most readily categorised, and which are used to distinguish the segregates of *Helichrysum*, are found in the involucre bracts, the cypselas and the pappus.

Involucre bracts

The median involucre bracts consist of a largely cartilaginous basal claw and a terminal, flat, papery lamina. The claw may be flat, semi-terete or terete; it has one to several vascular strands that are found in a thickened, semi-opaque cartilaginous area, the stereome. The stereome may appear divided towards its apex so as to form a clear zone (a fenestra or window) within a semi-opaque surround and is then referred to as being fenestrated (Drury 1970).

The vascular strands of the stereome may terminate at the apex of the claw (as in *Xerochrysum bracteatum* (Vent.) Tzvelev), or the central or solitary strand may continue into the lamina (as occurs in species here included in *Coronidium*). In some species the presence or absence of a fenestra depends on the position of the bract in the involucre, thus in *X. bracteatum* the claws of the inner involucre bracts are fenestrated while those of the median are not.

Cypselas

The cypselas anatomy of a number of species of *Helichrysum s.lat.* was investigated by Tvrtković-Šahin (1982). She remarked on the presence of paired idioblasts with anticlinal walls in the epicarp of the cypselas in *Helichrysum bracteatum* (= *Xerochrysum bracteatum*) and in a group of apparently related Australian species of *Helichrysum* that were subsequently referred to the '*Helichrysum elatum* group' by Wilson (1992). The shape of these idioblasts ('fenestrae' of Wilson 1992) is largely species

specific and the associated epicarp cells show considerable variation in the cuticular sculpturing of the periclinal walls and in the presence or absence of scattered micropapillae (only recorded on the epicarp of *H. elatum*). The species of the *H. elatum* group are here placed in *Coronidium* (Figure 1). The laterally paired idioblasts contrast with the vertically paired (usually myxogenic) papillae that are found in a number of genera of the Gnaphalieae, e.g. *Actinobole* Endl., *Anemocarpa*, *Hyalosperma* Steetz, and *Millotia* Cass.

Pappus

In all Australian genera of the '*Helichrysum*' group the pappus is made up of denticulate or shortly plumose capillary bristles without spreading basal cilia. These bristles are broader at their base; they may remain free or may be united to form a basal ring. The pappus, if of basally united bristles, may persist in its entirety, may shed the free portions of its bristles, or may be deciduous as a whole.

The bristles of the species in the *Coronidium oxylepis* group are fused to each other for about the basal 0.03 mm and readily break about 0.15 mm above the base (Figure 1A). At the zone of dehiscence the cells of the bristle are quadrate and are only loosely attached to neighbouring cells, while above and below this zone the cells of the bristle are narrowly oblong to linear and are firmly fused together.

In the *C. elatum* group (Figure 1B) the bristles are free to their base and are either deciduous as a whole or are semi-persistent and then sometimes break unevenly near the base to produce a frayed margin, the cells at the area of the fracture being linear-acuminate and splinter-like.

The infrageneric groups compared

The most obvious morphological differences between *Coronidium* (groups '*oxylepis*', '*elatum*', and '*scorpioides*'), the '*Xerochrysum bracteatum*' group, and the '*Xerochrysum leucopsideum*' group are outlined below.

Xerochrysum bracteatum group

Median involucrel bracts: claw broadly oblong; stereome broad with several anastomosing veins that terminate at apex of claw.

Cypselas: pericarp thick, collenchymatous to sclerenchymatous, smooth; apex patelliform, the pericarp extending slightly around base of pappus, bristles united at base and the pappus deciduous as a whole or persistent and intact.

Idioblasts: linear, laterally paired.

Plants: not rhizomatous.

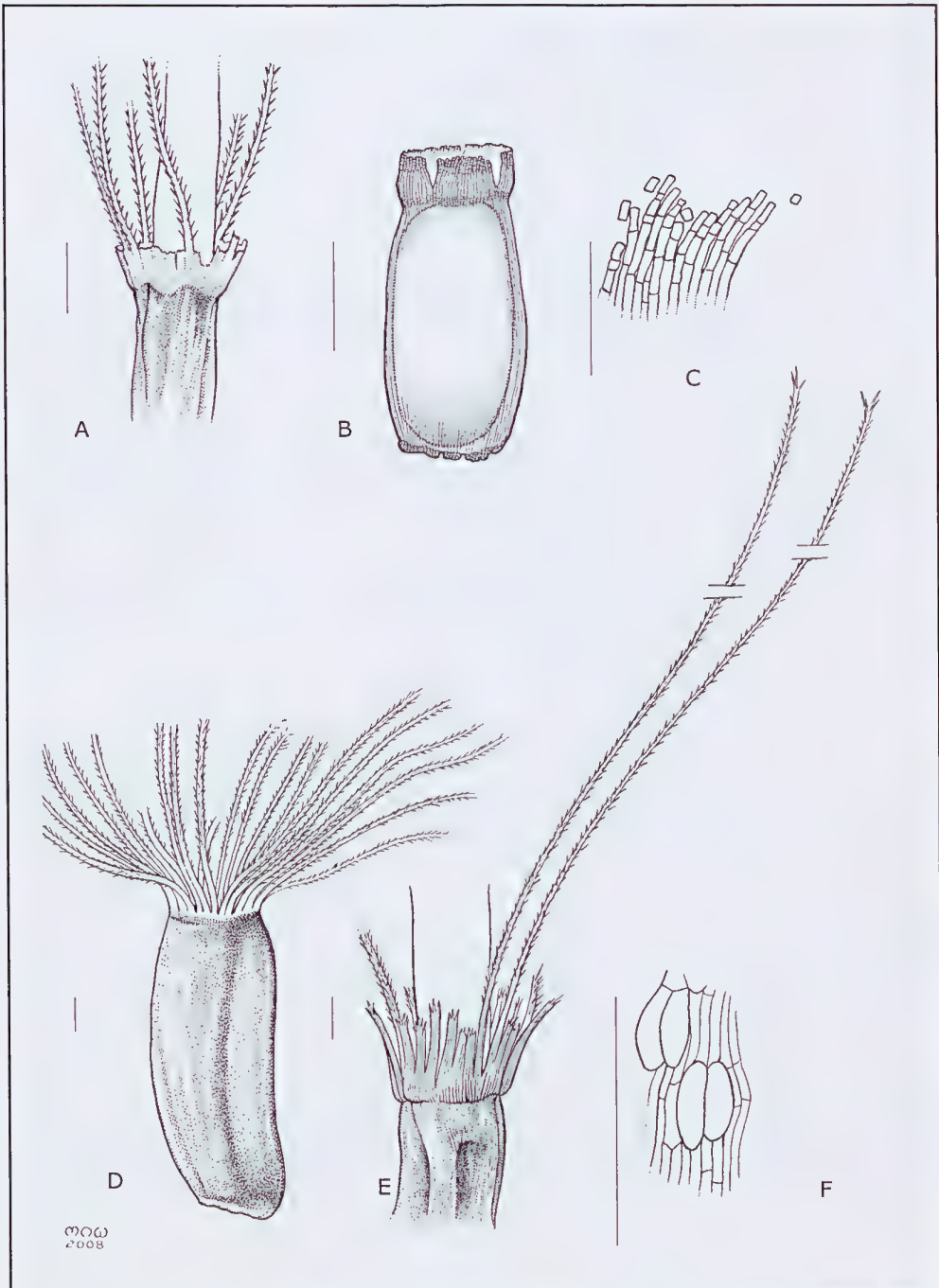


Figure 1. A. *Coronidium oxylepis* – immature cypselum showing partial dehiscence of pappus; B. *Coronidium rupicola* – cypselum with dehiscent pappus (note translucent pericarp); C. *Coronidium rupicola* – zone of dehiscence of pappus; D. *Coronidium telfordii* – cypselum (note almost opaque pericarp); E. *Coronidium elatum* subsp. *vellerosum* – immature cypselum with partial dehiscence of pappus; F. *Coronidium boormanii* – surface view of pericarp of cypselum showing paired idioblasts. Scale bars = 0.2 mm.

***Xerochrysum leucopsideum* group**

Median involucre bracts: claw oblong; stereome with a single vein that passes into the lamina.

Cypsela: truncate, pericarp crustaceous, smooth, not extending around base of pappus; bristles united at base and deciduous as a whole or persistent.

Idioblasts: not present.

Plants: rhizomatous.

***Coronidium oxylepis* group**

Median involucre bracts: claw semi-terete to linear and thick, 1-nerved, the nerve extending into the lamina.

Cypsela: truncate, pericarp very thin and transparent; pappus arising from margin of apex, bristles free and persistent or deciduous, or united in a ring at base and breaking evenly a short distance above base to leave a short, almost truncate crown on the cypsela.

Idioblasts: laterally paired, linear to elliptic.

Plants: not rhizomatous

***Coronidium elatum* group**

Median involucre bracts: claw semi-terete to linear and thick, 1-nerved, the nerve extending into the lamina.

Cypsela: truncate, pericarp crustaceous and opaque, epicarp cells with cuticular sculpturing (and in *C. elatum* with scattered micropapillae); pappus arising from margin of apex, bristles free, either deciduous or persistent and then fracturing unevenly towards base to leave a frayed margin.

Idioblasts: laterally paired, linear to elliptic.

Plants: not rhizomatous.

***Coronidium scorpioides* group**

Median involucre bracts: claw semiterete and thick, 1-nerved, the nerve extending into the lamina.

Cypsela: truncate, pericarp very thin and transparent; pappus arising from margin of apex, bristles very shortly united at base and breaking unevenly a short distance above it to leave a frayed edge.

Idioblasts: laterally paired, linear.

Plants: rhizomatous.

Coronidium

Coronidium Paul G. Wilson, *gen. nov.*

Herbae perennes. Capitula pro parte maxima homogama, multiflora, discoidea. Receptaculum plus minusve planum, epaleatum. Bractee involucrali multiseriatae, scariosae, laminis radiato-patentibus; unguibus bractearum medius et intimus semi-teretibus vel linearibus, nervo solitarius in laminam extenso, stereomate indiviso. Flosculi plerumque hermaphroditi; corolla tubulosa; antherorum caudae graciles; styli rami graciles, apice rotundato vel triangulari vel attenuato. Cypselae cylindricae; pericarpium 2-nervosum, crustaceum vel membranaceum, fulvum vel hyalinum; testa pallido brunea. Pappo setae filiformes, denticulatae, interdum supra basin facile ruptae et calyculum brevem dentatum supra cypselam reliquum.

Typus: *Corinidium oxylepis* (F.Muell.) Paul G. Wilson (*Helichrysum oxylepis* F.Muell.)

Helichrysum sect. *Helichrysum* ser. *Chrysolepidea* [subser.] *Oxlepeidea* DC., *Prodr.* 6: 190 (1838). *Type*: not designated (containing only *H. collinum* and *H. rupicola* which are here recognised as conspecific).

Helichrysum sect. *Blepharolepis* [informal group] *Argyrolepis* DC., *Prodr.* 6: 193 (1838) *p.p. min.* (containing *H. elatum*, *H. lanuginosum*, and several other species not recognised as being in *Coronidium*).

Helichrysum sect. *Oxylepis* Benth., *Fl. Austral.* 3: 614, 623 (1867). *Type*: *Helichrysum oxylepis* F.Muell.

Perennial herbs. Capitula predominantly homogamous, discoid, rarely heterogamous, disciform. Receptacle ± flat, epaleate. Involucral bracts multiseriate, scarious, spreading when mature; claw of intermediate and inner bracts semi-terete to linear or narrowly oblong, cartilaginous, nerve solitary and extending into the lamina, stereome undivided. Florets bisexual or rarely some outer florets female; corolla narrowly cylindrical, broadened above, lobes short, ovate, nerves extending to base or to apex of lobes; anther tails slender, equal to or exceeding collar, appendage ovate, outwardly concave; style arms slender; style apex truncate, rounded, ovate, triangular or attenuate, strongly papillose. Cypselae cylindrical or oblongoid; pericarp two-veined, either crustaceous, opaque and brown to fawn, or very thin and transparent, smooth, glabrous, with laterally paired linear or elliptic clear cells (idioblasts); testa brown, epidermal cells oblong, somewhat curved or straight, mostly with transverse sinuate thickening; carpophore tumid, glossy, of c. 3 rows of thickened cells. Pappus bristles filiform, denticulate, smooth towards base where united in a persistent ring and breaking a short distance above it, or free and persistent, or deciduous as a whole.

Chromosome number. The only published chromosome count is that for *C. scorpioides*, $n = 24$ (Watanabe *et al.* 1999), however, B.L. Turner, *in sched.*, recorded $n = 14$ for *C. oxylepis* (B.L. Turner 5625 and 5612).

Notes. The laterally paired, clear, normally myxogenic cells that are found in the outermost layer of the pericarp in *Coronidium* are referred to as idioblasts. In the superficially similar genus *Anemocarpa* the idioblasts are vertically paired, i.e. one cell is placed above the other.

Etymology. Derived from the Greek words *korone* a crown, and the diminutive *-idion*, with reference to the short pappus crown that in the *C. oxylepis* group of species remains on the cypsela after the pappus bristles have broken near their base and fallen away.

A genus of 17 species endemic to eastern Australia except for two that are also found in south-eastern South Australia of which one extends into Tasmania.

1. Medial involucre bracts elliptic or lanceolate, smooth, white to yellow
2. Medial involucre bracts very narrowly lanceolate, straw-coloured to dusky yellow
3. Capitulum obviously woolly outside
 4. Branches with a solitary, terminal, densely woolly capitulum; involucre bracts curled at anthesis.....2. *C. rupicola*
 - 4: Branches bearing several sparsely to moderately woolly capitula; involucre bracts not curled at anthesis
 5. Leaves glabrous above, involucre bracts serrulate.....3. *C. cymosum*
 - 5: Leaves somewhat woolly above, involucre bracts with entire margin 4. *C. fulvidum*
- 3: Capitulum not or scarcely woolly outside
 6. Leaves glabrous or sparsely cottony above 1. *C. oxylepis*
 - 6: Leaves woolly all over.....5. *C. lanosum*
- 2: Medial involucre bracts narrowly elliptic, white to pink or yellow
7. Medial involucre bracts white to pink
 8. Leaves linear
 9. Subtending herbaceous bracts distinctly separated from involucre; outermost involucre bracts shortly stipitate; cypsela with thin transparent pericarp (testa brown); pappus bristles breaking shortly above the persistent base (Qld).....7. *C. glutinosum*
 - 9: Subtending herbaceous bracts not separated from involucre; outermost involucre bracts sessile; cypsela with crustaceous, opaque, reddish brown pericarp obscuring testa; pappus bristles persistent or deciduous intact (S.A., Vic., N.S.W.)
 10. Leaves variably woolly below (Vic., N.S.W.)16. *C. waddelliae*
 - 10: Leaves with sessile or shortly stipitate glandular hairs below (S.A., Vic.)..... 15. *C. adenophorum*
- 8: Leaves ovate to obovate
 11. Outer involucre bracts with a prominent semiterete claw
 12. Leaves glandular-papillose, not woolly; pericarp crustaceous, dark reddish brown (N.S.W.)..... 11. *C. boormanii*
 - 12: Leaves (at least the lower) somewhat woolly; pericarp thin, transparent (Qld).....8. *C. lanuginosum*
 - 11: Outer involucre bracts sessile or subsessile and obscured by wool
 13. Leaves congested, narrowly elliptic, felty below, margin flat or recurved..... 14. *C. lindsayanum*
 - 13: Leaves scattered, elliptic to broadly elliptic, flat, woolly below
 14. Leaves eventually glabrous and dull above; capitula solitary or in panicles
 15. Leaves elliptic, pinnately veined, indumentum white 12. *C. elatum*

- 15: Leaves ovate to elliptic, 3-nerved from near base, indumentum yellowish grey..... 13. *C. telfordii*
- 14: Leaves ± woolly above and below; capitula solitary on stems
- 16: Leaves crowded towards base of plant, narrowly elliptic; pappus bristles persistent in intact state 10. *C. kaputaricum*
- 16: Leaves scattered, narrowly to broadly elliptic; pappus bristles breaking just above a persistent base 9. *C. newcastlianum*
- 7: Medial involucre bracts yellow 6. *C. flavum*
- 1: Medial involucre bracts oblanceolate, apically wrinkled, yellow 17. *C. scorpioides*

Coronidium oxylepis group [species 1–9]

Style apex rounded to acuminate. Cypselas cylindrical or oblongoid; pericarp very thin and transparent, smooth, glabrous, with laterally paired, linear or elliptic, clear idioblasts; testa brown, epidermal cells narrowly oblong, somewhat curved or straight. Pappus bristles filiform, denticulate, smooth and thickened towards base, sometimes united in a persistent ring and breaking a short distance above base to leave an apical corona on cypselas.

Notes. The pappus bristles of the species in this group are fused to each other for about the first 0.03 mm and readily break about 0.15 mm above their base. At the zone of dehiscence the cells of the bristle are quadrate and are only loosely attached to neighbouring cells while above and below this zone the cells of the bristle are narrowly oblong to linear and are firmly fused together. (Figure 1A, B, C)

1. *Coronidium oxylepis* (F. Muell.) Paul G. Wilson, *comb. nov.*

Helichrysum oxylepis F. Muell., *Fragm.* 1: 35 (1858). – *Helichrysum collinum* DC. var. *oxylepis* (F. Muell.) Maiden & Betche, *Census New South Wales Pl.* 202 (1916). *Type:* Moreton Island, Qld, August 1855, F. Mueller (*holo:* MEL 1586000; *iso:* NSW).

[*Helichrysum collinum* auct. non DC.: Benth., *Fl. Austral.* 3: 623 (1867) p.p.; J. Everett in G. J. Harden, *Fl. New South Wales* 3: 232 (1992).]

Illustration. Harden (1992) p. 232 as *Helichrysum collinum*.

Perennial herb with woody rootstock, to 60 cm high; branches woolly or rarely glandular-puberulous or glabrous. *Leaves* linear to obovate, chartaceous to somewhat fleshy, to 7 cm long, obtuse to acuminate, sessile or narrowly cuneate at base, glabrous to sparsely cottony above, densely cottony to glabrous below. *Peduncle* slender. *Capitula* solitary, hemispherical, c. 3 cm diam. *Involucre bracts* yellow to straw-coloured, scarious; *outer bracts* somewhat loosely arranged, linear-acuminate, with glandular-puberulous green claw, in all c. 3 mm long; *intermediate bracts* with narrow-lanceolate acuminate yellow limb 6–10 mm long, becoming reflexed at maturity, claw terete c. 3 mm long; *innermost bracts* linear-acuminate c. 5 mm long. *Style* appendage very narrowly triangular. *Cypselas* c. 1.3 mm long; *pericarp* thin, transparent, with linear idioblasts; testa brown, the narrow cells transversely thickened. *Pappus bristles* filiform, denticulate, united at base, breaking shortly above base. Chromosome number $n = 14$, *fide* B.L. Turner 5625 and 5612 *in sched.*

Distribution and habitat. Found in south-east Queensland and in eastern New South Wales. The coastal populations mostly occur on deep sand while those inland have been collected from a variety of substrates.

Notes. Bentham (1863) considered that this species and *H. rupicola* (referred by Bentham to *H. collinum*) were closely related, while Maiden and Betche (1916) made *H. oxylepis* a variety of *H. collinum*; subsequent treatments have continued to treat them as conspecific. The two taxa are, however, clearly distinct and their distributions do not overlap (see also under *C. rupicola*).

Three subspecies are recognised.

1. Stem woolly, at least towards apex; leaves narrowly oblong or elliptic, sparsely to densely woolly
 2. Leaves narrowly oblong, sessile, sparsely cottony to almost glabrous **1a. subsp. oxylepis**
 2. Leaves narrowly ovate to narrowly obovate, narrowed at base, cottony to woolly..... **1c. subsp. lanatum**
1. Stem glabrous or minutely glandular-puberulous; leaves narrowly obovate to obovate, succulent, glabrous or almost so..... **1b. subsp. carnosum**

1a. *Coronidium oxylepis* (F.Muell.) Paul G. Wilson subsp. *oxylepis*

Erect *perennial* to 0.5 m high. *Stem* woolly, densely so towards apex. *Leaves* often densely clustered towards base, scattered above, narrowly oblong to linear, acuminate, sparsely cottony or rarely glabrous. *Capitulum* receptacle glandular-puberulous between the involucre bracts. *Involucre bracts* with the stipe glandular-puberulous.

Distribution and habitat. A coastal or near-coastal plant that occurs in south-east Queensland south of Caloundra and in north-east New South Wales north of Yamba, growing in sandy situations.

Specimens examined. QUEENSLAND: Caloundra, *S.T. Blake* 4006 (BRI); Ipswich, *T.F. Hall* 225 (BRI); Peregian, *B.L. Turner* 5625 (BRI); Moreton Island, Sep. 1908, *C.T. White* (BRI). NEW SOUTH WALES: 1.6 km N of Pottsville, *R. Coveny* 4402 (BRI, NSW); c. 1 mile (c. 1.6 km) S of Byron Bay, *R.D. Hoogland* 11669 (CANB); 4 miles (c. 6.5 km) S of Yamba, *D.J. McGillivray* 2137 (NSW); between Evans Head and Iluka, *D.J. McGillivray* 2702 (NSW); 5 km S of Sandon (NSW).

The typical variant of this subspecies, from the Moreton Bay district, has a slender stem with scattered linear leaves that are sparsely cottony. The variant found further south, particularly that found in north-east New South Wales, has a short stem with firm, linear, glabrescent leaves that are congested towards the base of the plant. There appears to be no disjunction between between the extremes of the two variants.

Mueller in his original description noted that the plant was found growing in coastal sand and that it had a mild fragrance.

This subspecies grades into subsp. *carnosum* to the north while to the south and inland it grades into subsp. *lanatum*.

1b. *Coronidium oxylepis* subsp. *carosum* Paul G. Wilson, *subsp. nov.*

Planta prostrata vel decumbens; caules infra capitulum minute glanduloso-puberuli aliter glabri. Folia dispersa, anguste oblongo-obovata vel obovata, aliquantum succulenta, glabra, 1.5–5 cm longa, ad basim attenuata, ad apicem obtusa vel rotundata, apiculata.

Typus: Fraser Island, Eli Creek, on eastern side of island, sandy dune on northern side of creek, 3 May 1967, *P. Baxter 813* (*holo*: BRI [AQ 248463])

Prostrate to decumbent *perennial*. *Stems* minutely glandular-puberulous below capitulum, otherwise glabrous. *Leaves* scattered, narrowly oblong-obovate to obovate, 1.5–5 cm long, narrowed towards base, obtuse to rounded and apiculate at apex, somewhat succulent, glabrous.

Distribution and habitat. Occurs on the south-east coast of Queensland between Noosa and Fraser Island. It is frequently found growing in deep sand, often on dunes.

Selected specimens examined. QUEENSLAND: Fraser Island, *P. Baxter 805* (BRI); Teewah, N. of Noosa Heads, 17 Jan. 1965, *H. Doing s.n.* (CANB); Sunshine Beach, Wide Bay district, 2 Mar. 1975, *P. Richter s.n.* (BRI); Lake Cootharaba, 1911, *J. Keys s.n.* (BRI).

1c. *Coronidium oxylepis* subsp. *lanatum* Paul G. Wilson, *subsp. nov.*

Planta erecta vel decumbens ad 60 cm alta. Rami, praecipue ad apicem, lanosi. Folia anguste elliptica, acuminata, ad 8 cm longa, sursum deminuens, ad basim variabiliter angustata, subter sparse vel dense lanosa, supra glabra vel sparse lanosa.

Typus: 12 miles (c. 19 km) N of Glenhaughton HS, Leichhardt District, Queensland, 14 October 1963, *N.H. Speck 1849* (*holo*: CANB 137894).

Erect or decumbent *perennial* to 60 cm high. *Branches* woolly, densely so towards apex. *Leaves* narrowly elliptic, acuminate, to 8 cm long, diminishing upwards, variably narrowed at base, sparsely to densely woolly below (rarely glabrescent), glabrous or sparsely woolly above. (Figure 2)

Distribution and habitat. Found in south-eastern Queensland and eastern New South Wales. Often growing on granite or sandstone in eucalypt forest.

Selected specimens examined. QUEENSLAND: 18.2 km W of Westmar, Moonie Hwy, *P.I. Forster 1911* (BRI); Palmgrove National Park, Bigge Range, *P.I. Forster 23702* & *R. Booth* (AD, BRI). NEW SOUTH WALES: 27 km E of Tenterfield on Casino Rd, *N.S. Lander 542* (NSW); 67 miles [c. 100 km] N of Windsor on hwy to Singleton, *B.L. Turner 5612* (MEL). A.C.T.: O'Connor, *H.S. McKee 7521* (CANB).

Notes. A subspecies that possibly should be recognised as more than one taxon. The density of the indumentum, the leaf shape, and the habit show variation but with no clear delineation between the different variants.

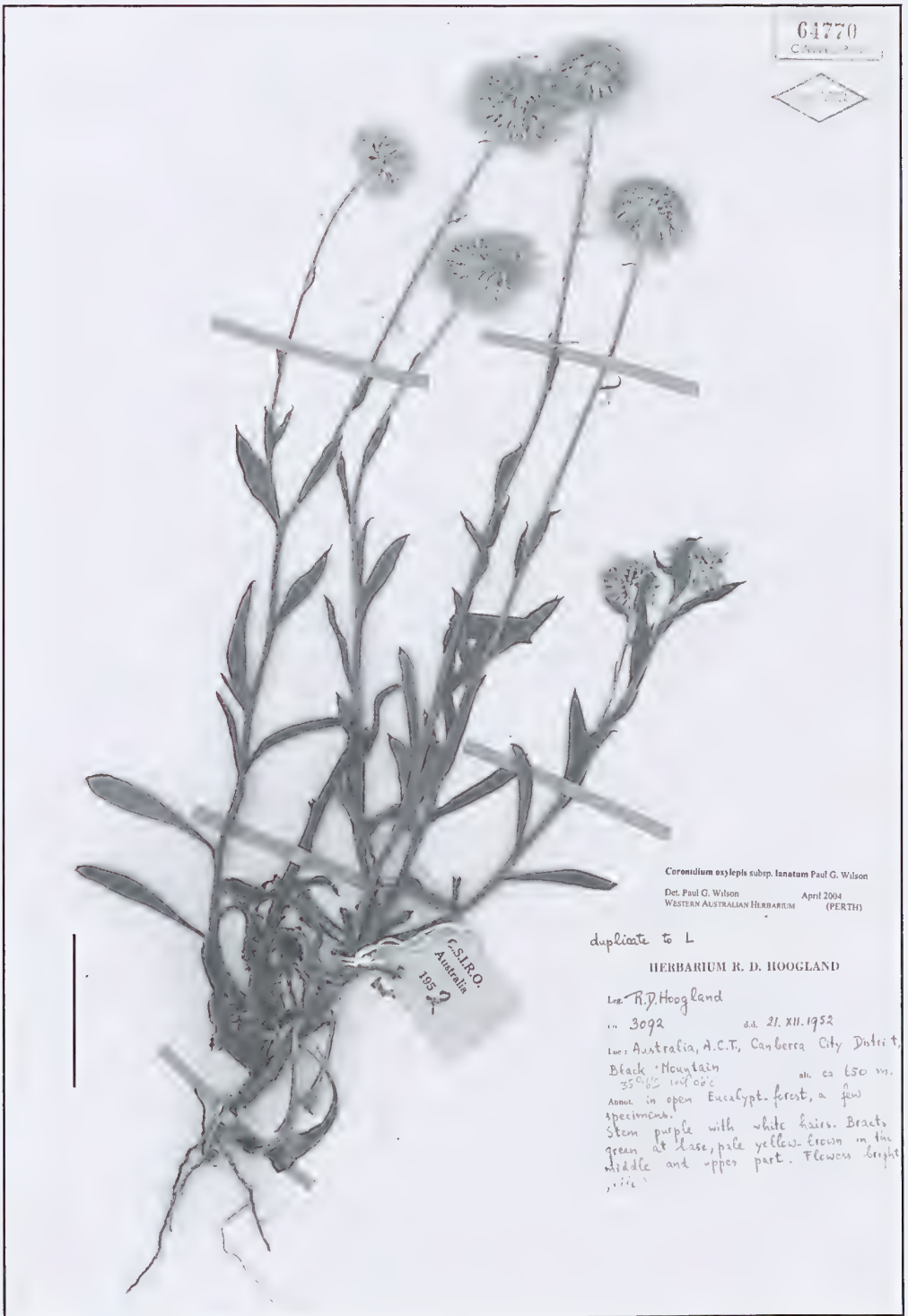


Figure 2. *Coronidium oxylepis* subsp. *lanatum* (R.D. Hoogland 3092, CANB 64770), scale = 5 cm.

2. *Coronidium rupicola* (DC.) Paul G. Wilson, *comb. nov.*

Helichrysum rupicola DC., *Prodr.* 6: 190 (1838); *Gnaphalium rupicola* (DC.) Sch. Bip., *Bot. Zeitung* 3: 171 (1845). *Type*: Cape Cleveland, Queensland, June 1819, *A. Cunningham* 267 (*holo*: G-DC microfiche photo seen; *iso*: MEL 1585998, CANB 00436696).

Helichrysum collinum DC., *Prodr.* 6: 190 (1838); *Gnaphalium endeavourense* Sch. Bip., *Bot. Zeitung* 3: 171 (1845). *Type*: 'Hills on the Shores of Endeavour River & Port Bowen' [= Port Clinton], Queensland, 1820, *A. Cunningham* 90 (*holo*: G-DC microfiche photo seen; ?*iso*: K, 'bare hills in the neighb[ourhoo]d of Endeavour River, N.S. Wales', 28 July 1820, *A. Cunningham*).

Helichrysum rupicola var. *danesii* Domin, *Biblio. Bot.* 89: 671 (1929). *Type*: Walsh Pyramid, Queensland, January 1910, *J. Danes* (*holo*: PR 531623, photo seen).

Illustration. Pearson & Pearson (199-) p. 221 (199-) as *Helichrysum rupicola*.

Subshrub to 50 cm high. *Branches* woolly. *Leaves* narrowly elliptic, acuminate, to 10 cm long, flat, woolly below, sparsely cottony to glabrous above. *Peduncles* slender, woolly. *Capitula* solitary, depressed globular, dense, c. 2 cm diam., woolly around base. *Involucral bracts* scarcely exceeding florets; claw woolly, semi-terete; lamina ciliate to entire; outer bracts: lamina linear-filiform; intermediate: lamina linear-acuminate c. 6 mm long yellow, curled and reflexed at maturity; innermost: laminae short, erect, linear-acuminate. *Outermost florets* occasionally female. *Anther* appendage triangular, c. 0.3 mm long. *Style* appendage ovate to narrowly ovate. *Cypsela* c. 1.3 mm long; pericarp thin, transparent with linear idioblasts; testa brown, the narrow cells transversely thickened. *Pappus* bristles filiform, denticulate, united at base and breaking shortly above it.

Distribution and habitat. Found in far north-east Queensland where it grows in open eucalypt forest, savannah woodland, and on exposed ridges.

Selected specimens examined. QUEENSLAND: 9.5 km E of Tully, *D.E. Boyland* 561 (BRI); Big Tableland, c. 27 km S by E of Cooktown, Daintree National Park, *P.I. Forster* 22758 (MEL); Mt Graham, *D. Halford* Q312 (BRI); *L.S. Smith* 11198 (CANB).

Note. On Hinchinbrook Island in Rockingham Bay, Queensland, occurs a variant with glabrous or almost glabrous leaves. This variant is known from two collections: *P. Sharpe* 1665, 'near cliff edge' (BRI), and *J. Dallachy*, November 1867, 'common all over the Plain' (MEL). These two collections show marked morphological dissimilarities which is possibly due to the differences in exposure experienced by the plants at the different sites.

3. *Coronidium cymosum* Paul G. Wilson, *sp. nov.*

Rami graciles, lanati. Folia anguste elliptica, plerumque 4–9 cm longa, infra lanata, supra glabra vel glabriuscula. Pedunculi graciles, ab axillis foliorum et bractearum orientibus. Capitula subglobularia, c. 2 cm diam.; bracteae sparse vel modice lanatae, exterioribus anguste ellipticae, interioribus ungue applanato vel semitereti, lamina anguste triangulari-acuminata, pallido lutea.

Typus: Blackdown Tableland, c. 35 km SE of Blackwater, Queensland, 3 September 1971, *R.J. Henderson*, *L. Durrington* & *P. Sharpe* 948 (*holo*: BRI [AQ 00014196]; *iso*: CANB 303554, MEL 2111963).

Erect *annual or perennial herb* to 1.5 m high, usually single-stemmed. *Branches* slender, woolly. *Leaves* narrowly elliptic, narrowed to a short petiole, mostly 4–9 cm long, woolly beneath, glabrous or glabrescent above. *Peduncles* slender, arising from the axils of the upper leaves or bracts. *Capitula* not subtended by foliaceous bracts, subglobular, *c.* 2 cm diam.; bracts congested, sparsely to moderately woolly, outer narrowly elliptic; inner with flattened to semiterete claw and narrowly triangular-acuminate, pale yellow, serrulate lamina that may become reflexed when mature, in all to 7 mm long. *Style* apex slender acuminate. *Cypsela* *c.* 1.3 mm long; pericarp thin, transparent with linear idioblasts; testa brown, the narrow cells transversely thickened. *Pappus bristles* filiform, denticulate, united at base and breaking shortly above it. (Figure 3)

Distribution and habitat. Found in coastal north-east Queensland and on the Blackdown Tableland. It grows on coastal dunes and in sandy soil in open forest or on sandstone ridges.

Selected specimens examined. QUEENSLAND: South Percy Island, *G.N. Batianoff* 11468 (BRI); 6.3 km S of Horseshoe Lookout, Blackdown Tableland National Park, *P.C. Jobson* 4970 (MEL); Shoalwater Bay Military Res., *P.R. Sharpe* 5533 (BRI).

Etymology. The specific epithet is derived from the cymose appearance of the inflorescence.

Notes. This species is readily distinguished from *C. rupicola* by the slender peduncles which arise from the axils of the upper leaves or cauline bracts, by the glabrous or weakly woolly capitula, and by the erect involucre bracts that may become reflexed, but not revolute, at maturity.

4. *Coronidium fulvidum* Paul G. Wilson, *sp. nov.*

Rami graciles, lanati. Folia anguste elliptica, plerumque 4–9 cm longa, infra dense lanata, supra sparse lanata vel glabrescentia. Pedunculi graciles, terminales. Capitula subglobularia, 2.5–3 cm diam.; bractae confertae fulvidae; exterioribus ungue anguste oblongo crasso lanoso 2 mm longo, lamina anguste elliptica nitida *c.* 4 mm longa; mediales ungue semitereti lanoso *c.* 4 mm longo, lamina anguste elliptica acuminata undulata, nitida demum reflexa.

Typus: Near Herberton, Anniversary Falls, Cook district, Queensland, 22 May 1989, *D.L. Jones* 4217 & *M.A. Clements* (*holo:* CANB (CBG 8913021); *iso:* BRI *n.v.*, MEL274574).

Erect branching *perennial herb* to 1 m high. *Branches* slender, woolly. *Leaves* narrowly elliptic, subsessile, mostly 4–9 cm long, woolly beneath, sparsely woolly or glabrescent above. *Peduncles* slender, terminal to branches. *Capitula* not subtended by foliaceous bracts, subglobular, 2.5–3 cm diam.; bracts compact, pale yellowish brown; outer with narrowly oblong woolly claw *c.* 2 mm long and narrowly elliptic, glossy, sparsely woolly lamina *c.* 4 mm long; medial with semi-terete woolly claw *c.* 4 mm long and narrowly elliptic acuminate undulate glossy lamina *c.* 7 mm long with smooth margin, becoming reflexed and somewhat curled with age; innermost with narrowly oblong woolly claw and narrowly triangular lamina, in all to 6 mm long. *Corolla* narrowly cylindrical, becoming narrowly turbinate above, *c.* 4.5 mm long, yellow. *Style* apex ovate, acute. *Cypsela* not seen in mature state. *Pappus bristles* filiform, denticulate, dehiscing shortly above base.

Distribution and habitat. Only known from the Herberton Range in the Cook district of Queensland where it is recorded as growing on rocky slopes in open eucalypt forest.



Figure 3. *Coronidium cymosum*. (J.R. Clarkson & T.D. Stanley 1024, AQ 268900), scale = 5 cm.

Additional specimen examined. QUEENSLAND: Herberton Range, I.R. Telford 12167 (CANB).

Etymology. The specific epithet alludes to the dull yellowish brown colour of the involucre bracts.

Notes. This species may be distinguished from *C. rupicola*, with which it has been confused, by the much longer and more obvious involucre bracts.

5. *Coronidium lanosum* Paul G. Wilson, *sp. nov.*

Rami graciles, lanati. Folia dense lanata, anguste elliptica ad elliptica vel obovata, 2–4 cm longa, obtusa vel acuta, apiculata, basim cuneata. Capitula c. 1.5 cm diam., solitaria, in pedunculis gracilibus remote bracteatis posita. Involucrum bractee compactae; bractee intermediae lamina lutea, glabra, anguste oblongo-acuminata, integra, glabra, nitida, c. 3 mm longa, demum ad medium reflexa, ungue gracili, semi-tereti, c. 2.5 mm longi, glanduloso-hirsuti.

Typus: Mt King, c. 96 km NNE of Hughenden, Queensland, 1 April 1998, E.J. Thompson HUG692 (*holo:* BRI [AQ 573739]).

Helichrysum sp. (Belyando River V.J. Nelder 3459), Queensland Herbarium, *Queensland vascular plants* 39 (1994).

Short-lived, branching, *perennial herb* to 40 cm high. Branches slender, woolly. *Leaves* densely woolly, narrowly elliptic to elliptic or obovate, 2–4 cm long, obtuse to acute, apiculate, cuneate at base. *Capitula* c. 1.5 cm diam., not subtended by leafy bracts, solitary on remotely bracteate slender peduncles. *Involucre bracts* compact, yellow, glabrous apart from the semi-terete glandular-hirsute claw; *outer bracts* ovate-acuminate, minutely denticulate; intermediate bracts with slender claw c. 2.5 mm long and narrowly oblong-acuminate entire, glabrous, glossy lamina c. 3 mm long, becoming medially reflexed at maturity. *Anther* appendage narrowly triangular, 0.4 mm long. *Style* apex ovate to acuminate. *Cypsela* c. 1.3 mm long; pericarp thin, transparent with linear idioblasts; testa brown, the narrow cells transversely thickened. *Pappus bristles* filiform, denticulate, united at base and breaking shortly above base. (Figure 4)

Distribution and habitat. Found in north-central Queensland where it is recorded as growing on volcanic rock in open woodland.

Selected specimens examined. QUEENSLAND: head of Flinders River, *anon.* 189 (MEL); near source of Poison Creek, S.T. Blake 8548 (BRI); Mt Sturgeon Station, C.E. Hubbard & C. Winders 7574 (BRI); 14.8 km N of Belyando River Crossing, V.J. Nelder 3459 (BRI).

Etymology. The epithet *lanosum* refers to the woolly indumentum that covers the branches and leaves.

Notes. A plant that is similar to *C. lanosum* is found in the Many Peaks Range, Queensland. It differs from *C. lanosum* in having leaves that are sparsely woolly above (not densely woolly) and in having involucre bracts with claws that are moderately woolly (not glandular-hirsute). It is only known to me from one collection, I.R. Telford 12309 (CANB).

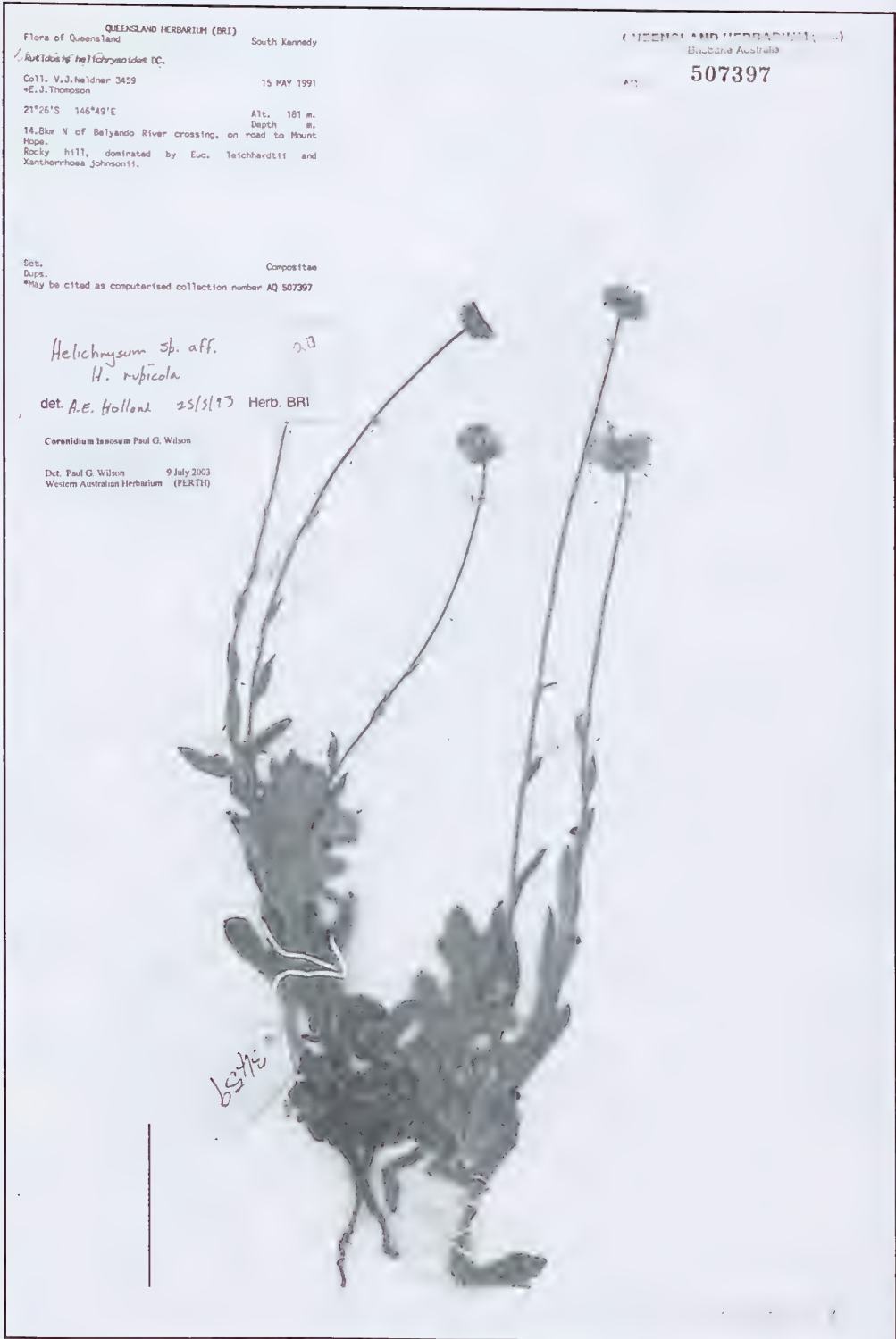


Figure 4. *Coronidium lanosum*. (V.J. Neldner 3459, AQ 507397), scale = 5 cm.

6. *Coronidium flavum* Paul G. Wilson, *sp. nov.*

Rami graciles, simplices vel modice ramosi, lanati. Folia sessilia, anguste elliptica vel obovata, acuta, basim cuneata, 4–5 cm longa, infra dense et supra leviter lanata. Pedunculi graciles, ad 20 cm longi. Capitula solitaria, hemisphaerica, ad basim lanosa, c. 2.5 cm diam. Involucre bractee compactae; bractee intermediae lamina lutea, obovata, acuminata, integra, c. 6 mm longa, ungue semi-tereti, c. 3 mm longi, lanosi.

Typus: 18.5 km W of Paluma, Queensland, 22 October 1989, P.C. Jobson 967 (*holo*: MEL 223774; *iso*: BRI [AQ 481153], CANB 9103497).

Helichrysum newcastlianum var. Bluewater Creek (A.R. Bean 3784), R.J.F. in Henderson (ed.), *Names and distribution of Queensland plants, algae, and lichens* (2002).

Erect annual or short-lived *perennial* to 75 cm high. *Stem* simple or slightly branched, woolly. *Leaves* sessile, narrowly elliptic to obovate, acute, apiculate, cuneate at base, 4–5 cm long, woolly, less densely so above. *Peduncles* terminal to branches, slender, to 20 cm long, woolly. *Capitula* solitary, hemispherical, woolly around base, c. 2.5 cm diam.; outer involucre bracts woolly: claw terete c. 2 mm long, lamina linear-lanceolate, c. 4 mm long; median bracts: claw semi-terete, woolly, c. 3 mm long, lamina glabrous, elliptic to obovate, acuminate, c. 8 mm long, yellow. *Style appendage* narrowly ovate. *Cypsela* c. 1.3 mm long; pericarp thin, transparent with linear idioblasts; testa brown, the narrow cells transversely thickened. *Pappus bristles* filiform, denticulate, united at base and breaking shortly above it. (Figure 5)

Distribution and habitat. Found in north-east Queensland near Hidden Valley, c. 85 km north-west of Townsville, where it grows on rocky hillsides in eucalypt woodland.

Selected specimens examined. QUEENSLAND: Bluewater Ck Rd, A.R. Bean 3784 (BRI); between Paluma and Hidden Valley, P.I. Forster 9483 (BRI).

Etymology. The epithet *flavum* refers to the yellow colour of the involucre bracts.

Notes. *Coronidium flavum* differs most obviously from most of the other species in the genus in having yellow involucre bracts. It differs from *C. lanosum* in having larger leaves and capitula, and in having bracts that do not become reflexed at maturity.

7. *Coronidium glutinosum* (Hook.) Paul G. Wilson, *comb. nov.*

Helipterum ('*Helipteres*') *glutinosum* Hook. in Mitch., *J. Trop. Austral.* 361 (1848); *Helichrysum glutinosum* (Hook.) Benth., *Fl. Austral.* 3: 621 (1867) *nom. illeg. non* A.Br. (1841); *Helichrysum elatum* var. *glutinosum* (Hook.) Moore & Betche, *Handb. Fl. N.S.W.* 281 (1893). *Type*: Depot Camp, [Maranoa R., near 'Forest Vale' homestead], Queensland, 31 August 1846, T.L. Mitchell (*holo*: K n.v.; *?iso*: NSW 19138, T.L. Mitchell 315, Sep 1846).

Illustration. Pearson (199–) p. 220, as *Helichrysum glutinosum*

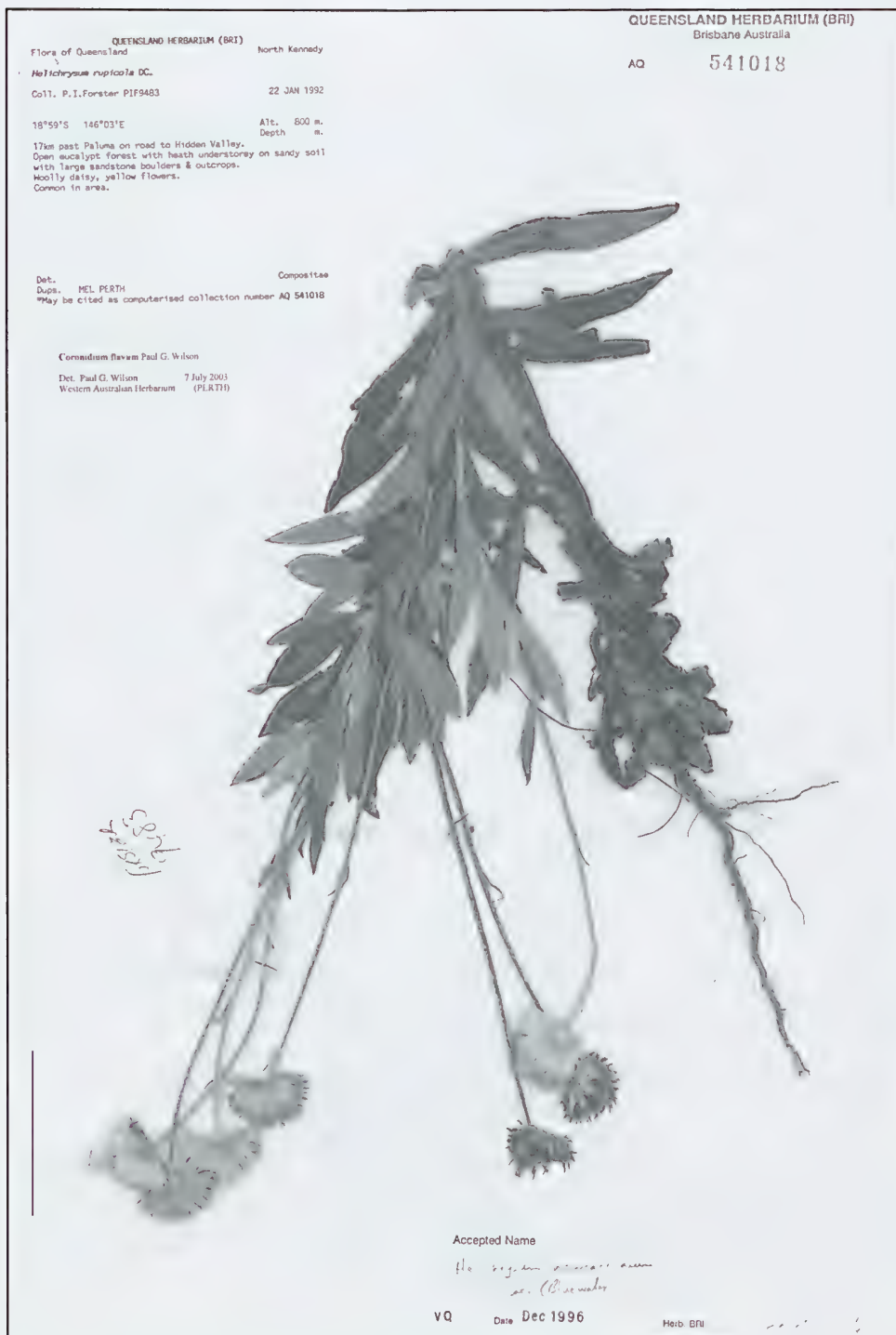


Figure 5. *Coronidium flavum*. (P.I.F. Forster 9483, AQ 541018), scale = 5 cm.

Viscid, strongly aromatic *herb or subshrub* to 1 m high. *Branches* densely glandular-hispid, sparsely cottony. Lower *leaves* narrowly elliptic, acuminate, to 7 cm long, flat, densely woolly below, sparsely so above, upper leaves linear, acuminate, cottony or glandular below, glandular-hispid above, margin recurved to revolute. *Peduncles* with filamentous, glandular bracts. *Capitula* solitary, hemispherical, 3–4 cm diam., subtending herbaceous bracts distinctly separate; *outer involucrel bracts* shortly stipitate: lamina very narrowly elliptic, acuminate, white to pale pink, claw narrowly oblong, *c.* 1.5 mm long, glandular-hirsute; intermediate bracts similar, claw semi-terete, in all to 15 mm long; innermost bracts very narrowly oblong, obtuse to acuminate, *c.* 7 mm long including the flattened claw, laminae reflexed at maturity. *Receptacle* prominently honeycombed. *Style appendage* ovate. *Cypsela c.* 1.3 mm long; pericarp thin, transparent with linear idioblasts; testa brown, the narrow cells transversely thickened. *Pappus* as in *C. oxylepis*.

Distribution and habitat. Found in north-central Queensland. Usually found growing on skeletal soil over sandstone, often in *Acacia* or eucalypt woodland.

Selected specimens examined. QUEENSLAND: 19.7 km E of Jericho, *A.D. Chapman* 1277 (BRI); Dawson Range, *M.D. Crisp* 3005 (CANB); Robinson Gorge National Park, *P.I. Forster* 11447 (BRI); Isla Gorge, *F.D. Hockings* 541 (BRI).

Note. This species is similar in appearance to *C. waddelliae*; however, in the latter the cypsela has a brown crustaceous pericarp with broadly elliptic idioblasts, and the pappus bristles are either persistent or tardily deciduous in an intact state.

8. *Coronidium lanuginosum* (A.Cunn. ex DC.) Paul G. Wilson, *comb. nov.*

Helichrysum lanuginosum A.Cunn. ex DC., *Prodr.* 6: 193 (1838); *H. albicans* Spreng. var. *lanuginosum* (DC.) Domin, *Biblioth. Bot.* 89: 668 (1929); *Gnaphalium stipitatum* Sch.Bip., *Bot. Zeitung* 3: 171 (1845) non *G. lanuginosum* Kunth (1820). *Type:* Rodds Bay, Queensland, May 1819, *A. Cunningham* 110 (*holo:* G-DC microfiche photo seen; *iso* (as *A. Cunningham* 266): CANB 00436693).

Helichrysum boormanii var. *tryonii* Domin, *Biblioth. Bot.* 89: 670 (1929). *Type:* South Percy Island, Queensland, 5 March 1906, *H. Tryon* (*isosyn:* BRI 364942), Port Denison, Queensland, *E. Fitzalan* (*isosyn:* MEL 262825). *Lectotype* here selected: South Percy Island, 5 March 1906, *H. Tryon* (*isolecto:* BRI 364942).

Helichrysum boormanii var. *gillivrayi* Domin, *Biblioth. Bot.* 89:670(1929). *Type:* Queensland, Port Curtis, November 1847, *John MacGillivray*. 'Voyage of Rattlesnake, Botany No. 52.' (*holo:* *n.v.*).

[*H. elatum* var. *fraseri* Benth., *Fl. Austral.* 3: 621 (1867) *p.p.* as to the *J. MacGillivray* collection cited; *syn:* *K n.v.*, not as to lectotype.]

[*Helichrysum boormanii* Maiden & Betche, *Proc. Linn. Soc. New South Wales* 30: 366 (1905) *p.p.* as to the syntype: Atherton, Queensland, August 1901, *E. Betche* (*syn:* BRI 364944, NSW 519160), not as to lectotype, see *Notes.*]

Perennial herb to 1.5 m high. *Branches* glandular-puberulous or woolly. *Leaves* somewhat dense, elliptic to obovate, obtuse to acute or attenuate, apiculate, narrowly cuneate or stem-clasping at base, to 10 cm long, glabrous to glandular or woolly below, glabrous or glandular puberulous above. *Capitula*

solitary or in an open leafy corymb, hemispherical, 3–6 cm diam. *Involucral bracts* white, limb very narrowly oblong-elliptic acuminate, all with semi-terete glandular, stipitate claws, lowermost loosely arranged and continuing down peduncle where grading into herbaceous, linear bracts. *Style* appendage narrowly triangular. *Cypsela* and *pappus* as in *C. oxylepis*.

Distribution and habitat. Endemic to northern and eastern Queensland, where usually found in rocky situations, sometimes on exposed rocky coasts.

Selected specimens examined. QUEENSLAND: Shaw Island., *G.N. Batianoff* 3219 (BRI); Keswick Island, *G.N. Batianoff* 9609289 (BRI); Arthur Point, *A.R. Bean* 2638 (BRI); 3.5 km N of Palmer River, *R.J. Cumming* 10766 (BRI); 20 miles [32 km] NE of Rockhampton, *S.L. Everist* 8009 (BRI); 1 km SW of Stones Hill, *P.I. Forster* 5604 (MEL); Stanage Point, *C.H. Gittins* 874 (BRI); 37 km from Paluma towards Ewan, *C. Gittins* 02522 (BRI); 3 miles [c. 5 km] N of Marlborough HS, *M. Lazarides* 6882 (CANB); Glen Geddes, *R.L. Specht* 351 (BRI); 15 km SE of Mareeba, *I.B. Staples* 240572/3 (BRI).

Notes. This species shows considerable morphological variation and occurs in a number of different habitats. It is likely that some of the variants will be found to warrant specific or infraspecific recognition.

Allan Cunningham recorded that he made the type collection at Rodds Bay on 30 May 1819; he gave it the number 266 after he had arranged his material in systematic order and this is the number that is on the label of the isotype in CANB. The number 110 on the holotype in G-DC may be a field number or it may have been applied subsequently, however, I consider that the two sheets represent the same collection.

A note by C.T. White (dated 7 March 1940) on the E. Betche syntype of *Helichrysum boormanii* in herb. BRI reads: 'M & B in their original account of the species listed 2 collections, Atherton *E. Betche* & Boonoo Boonoo *J.L. Boorman*; though they distributed the latter as a type their description applies more especially to the Atherton plant & that's the one I would regard as the type of the species.' In spite of C.T. White's note the name *C. boormanii*, *q.v.*, is here lectotypified on the *Boorman* collection as this was evidently the intention of Maiden and Betche. The *cypsela* of the *Boorman* collection is of the form found in the *C. elatum* group, while the *cypsela* of the Betche collection is of the form found in the *C. oxylepis* group, as also is the *cypsela* of *C. lanuginosum*.

9. *Coronidium newcastlianum* (Domin) Paul G. Wilson, *comb. nov.*

Helichrysum newcastlianum Domin, *Biblioth. Bot.* 89: 670 (1929). *Type:* Newcastle Range, Queensland, *s. dat.* *F. Mueller s.n.* (*iso:* MEL 2116945).

Perennial herb to 60 cm high with woody rootstock. *Branches* slender, densely woolly. *Leaves* sessile or short- to long-petiolate, narrowly oblong-elliptic to obovate, obtuse to acute, 3–7 cm long, densely woolly. *Peduncles* slender, 2–15 cm long. *Capitula* solitary, 3–4 cm diam., woolly at base, subtending bracts linear, obscure; *involucral bracts* compact, very narrowly oblong-elliptic, acute, white (or pink when young), outer sessile, intermediate with semi-terete claw woolly and glandular-hirsute, in all to 12 mm long; innermost similar, *c.* 4 mm long. *Style* appendage ovate. *Cypsela* *c.* 1.3 mm long; pericarp thin, transparent with linear idioblasts; testa brown, the narrow cells transversely thickened. *Pappus* as in *C. oxylepis*.

Distribution and habitat. Occurs in north-central and north-east Queensland where it is generally found growing in open eucalypt forests on skeletal soils in rocky situations.

Selected specimens examined. QUEENSLAND: 16 km NW of Mt Garnet, *A.R. Bean* 5471 (BRI); between Herberton & Watsonville, *L.J. Brass* 33604 (BRI); Mt Mulligan, *J.R. Clarkson* 5897 (BRI); 1.5 km W of Herberton, *B.J. Conn & J. Clarkson* 1144 (BRI, MEL); Millstream Falls turnoff, south of Herberton, *J.R. Maconochie* 2666 (BRI, CANB); Newcastle Range, 20 miles [*c.* 32 km] east of Forsayth, *N.H. Speck* 4705 (BRI); Herberton Range, *I.R. Telford* 11358 & *R.J. Rudd* (AD, MEL).

Notes. *Coronidium newcastlianum* differs from *C. lanuginosum*, with which it has been confused, in having a leaf lamina that is woolly all over and involucre bracts that are very congested. The median and inner involucre bracts have semi-terete claws while the outer are sessile and do not continue down onto the peduncle.

Coronidium elatum group [species 10–16]

Style apex rounded to acuminate. Cypselas: pericarp crustaceous, usually dark reddish brown, with very short, laterally paired idioblasts; testa brown, epidermal cells narrowly oblong, curved or straight, sometimes transversely thickened. Pappus bristles free to base and either deciduous as a whole or persistent but then sometimes breaking unevenly near base to produce a frayed margin, the cells at the area of the break being linear-acuminate and splinter-like. (Figure 1D, E, F)

10. *Coronidium kaputaricum* Paul G. Wilson, *sp. nov.*

Planta perennis decumbens, dense lanata. Folia in ramis conferta, omnino dense lanata, elliptica, acuta, versus basim attenuata, in toto 4–9 cm longa. Pedunculus terminalis, remote bracteatus. Capitulum solitarium, *c.* 3.5 cm diam. Bracteeae involucrales albae, nitidae, dense confertae; lamina flaccida, anguste oblonga, acuminata, ad basim lanosa, ad 12 mm longa; unguis dense lanatus, anguste oblongus, crassus, cartilagineus. Cypselas *c.* 3 mm longa; pericarpium tenuiter crustaceum, opacum; pappi setae filiformes, plus minusve librae, persistentes.

Typus: New South Wales, Nandewar Range, Mt Kaputar National Park, The Governor, 13 November 1995, *I.R. Telford* 12080 (*holo:* PERTH 06072976; *iso:* CANB, K, MEL, NE, NSW, all *n.v.*).

Decumbent, densely woolly *perennial*. Leaves congested, densely woolly all over, elliptic, acute, narrowed to a petiole half the length of or equal to lamina, in all 4–9 cm long, dead leaves semipersistent. Peduncle terminal, densely woolly, to 10 cm long, remotely bracteate. Capitulum solitary, *c.* 3.5 cm diam., subtended by one or two woolly bracts. Involucre bracts white, glossy, congested, lamina weak, very narrowly oblong-acuminate, woolly towards base, to 12 mm long; claws densely woolly, very narrowly oblong, thick, cartilaginous, with a single nerve, the outer very short, the intermediate *c.* 4 mm long. Style appendage rounded. Cypselas *c.* 3 mm long; pericarp thinly crustaceous, fawn-coloured, opaque, with paired linear idioblasts 0.1–0.2 mm long; testa dark reddish brown. Pappus bristles filiform, minutely denticulate, barbellate at apex, smooth and broadened towards base, ± free, persistent.

Distribution and habitat. Known only from the Nandewar Range in the Northern Tablelands of New South Wales. Evidently confined to crevices in basaltic cliff faces.

Selected specimens examined. NEW SOUTH WALES: Mt Kaputar National Park, Dec. 1977, *J. Friend* (NSW); walking track near The Governor, *A.M. Lyne* 1300 & *J. Lyne* (CANB); Nandewar Range, The Governor, 25 Aug. 1973, *B. Muffet s.n.* (CANB).

Etymology. The specific epithet refers to the type locality.

Note. The relationship of this species to other members of the *C. elatum* group is unclear.

11. *Coronidium boormanii* (Maiden & Betche) Paul G. Wilson, *comb. nov.*

Helichrysum boormanii Maiden & Betche, *Proc. Linn. Soc. New South Wales* 30:366(1905). *Lecto* here chosen: Boonoo Boonoo, New South Wales, Nov. 1904, *J.L. Boorman* (*lecto*: NSW 230757; *isolecto*: MEL1585991), see *Notes*.

Illustration. Harden (1992) p. 233, as *Helichrysum boormanii*

Erect, *perennial herb* to 1.5 m high. *Branches* densely glandular-hirsute, sparsely cottony along lines decurrent from leaf-margins. *Leaves* viscid, elliptic to narrowly elliptic, to 10 cm long, acuminate to attenuate, cuneate and stem-clasping at base, entire, smooth, glandular-puberulous on both surfaces. *Capitula* on leafy peduncles, in corymbs or solitary, hemispherical, 3–6 cm diam.; *involucral bracts* very narrowly oblong, acuminate, white, claw slender, semi-terete, reddish brown, prominently glandular-hirsute, outer bracts clawed, loosely arranged and sometimes extending down peduncle. *Style apex* narrowly triangular. *Cypsela* obscurely 4-angled, *c.* 2.5 mm long; pericarp crustaceous, dark brown, glossy, with numerous short elliptic idioblasts *c.* 0.05 mm long. *Pappus bristles* free, persistent as a whole or breaking unevenly near base.

Distribution and habitat. Found in the Northern Tablelands of New South Wales in the hills north of Tenterfield where it predominantly grows over granite rock in open eucalypt forest.

Selected specimens examined. NEW SOUTH WALES: above Timbarra, east of Tenterfield, *J. Carrick* 3260 (AD); 8 m [*c.* 15 km] NE of Tenterfield, *I.R. Telford* 2498 (CANB); 9.9 km S of Boonoo Boonoo River on Mt Lindesay Hwy, *Peter G. Wilson* 1322 & *R. Rowe* (BRI).

Notes. The type citation for *Helichrysum boormanii* was as follows: ‘Atherton, N. Queensland (E. Betche; Aug. ‘01); Boonoo Boonoo, N.S.W. (J.L. Boorman, Nov. ‘04)’. C.T. White, in a comment dated 7 March 1940, on the Betche syntype in BRI wrote ‘M & B in their original account of the species listed 2 collections, Atherton E. Betche & Boonoo Boonoo J.L. Boorman though they distributed the latter as a type their description applies more especially to the Atherton plant & that’s the one I would regard as the type of the species.’ The name *H. boormanii* is here lectotypified on the Boorman collection since this action appears to have been the intention of Maiden and Betche and which also has the advantage of preserving the epithet *boormanii*.

The lectotype sheet has a label written and signed by Boorman, the collector, which is dated January 1903. In the protologue the collecting date is given as November 1904, which agrees with the printed label on the lectotype sheet and with the typed labels on the isolectotype sheets in MEL and NSW.

The cypsela of *C. boormanii*, *sensu lectotypica*, is of the ‘*elatum*’ form, while the cypsela of the Betche syntype (which is here referred to *C. lanuginosum*) is of the ‘*oxylepis*’ form.

12. *Coronidium elatum* (A.Cunn. ex DC.) Paul G. Wilson, *comb. nov.*

Helichrysum elatum A. Cunn. ex DC., *Prodr.* 6: 193 (1838); *Gnaphalium elatum* (DC.) Sch.Bip., *Bot. Zeitung (Berlin)* 3: 171 (1845) *nom. illeg. non* Lam. (1788). *Type*: 'in Nova-Hollandia orient. et merid.', ex herb. Museum de Paris (*syn*: G-DC microfiche photo seen); Illawara, A. *Cunningham* (*syn*: n.v.); Port Jackson, A. *Cunningham* 115 (*syn*: G-DC microfiche photo seen); F. *Sieber* 346 (*syn*: G-DC microfiche photo seen).

Helichrysum albicans Sieb. ex Spreng., *Syst. Veg.* 3: 482 (1826) *nom. illeg. non* A. Cunn. (1825); *Helichrysum albicans* Spreng. var. *commune* Domin, *Biblioth. Bot.* 89: 668 (1929) *nom. illeg.* ≡ *H. albicans* Spreng. var. *albicans*. *Type*: 'Novae Hollandia', F. *Sieber* 346 (*iso*: G-DC microfiche photo seen).

Erect *subshrub* to 2 m high. *Branches* woolly. *Leaves* ovate to elliptic, acute, entire or slightly sinuate, to 12 cm long, chartaceous, pinnately veined, woolly below, glabrous or sparsely cottony above, petiole slender, 1–2 cm long, woolly. *Peduncles* slender, woolly, with few linear, herbaceous bracts. *Capitula* solitary, or in a compact or open cyme, 4–5 cm diam., hemispherical, subtended by linear-acuminate, woolly, herbaceous bracts; *involucral bracts* white to translucent; lamina of outer bracts ovate, subsessile; lamina of medial bracts narrowly oblong, acute to acuminate, claw slender, glandular-hirsute abaxially, cottony, in all to 20 mm long. *Style apex* ovate. *Cypsela* cylindrical, 2.0–2.5 mm long; pericarp crustaceous, opaque, dark reddish brown, smooth or pitted with few to numerous narrowly elliptic myxogenic idioblasts *c.* 0.05 mm long. *Pappus bristles* filiform, persistent as a whole or breaking *c.* 0.5 mm above persistent base to leave a frayed margin.

Distribution and habitat. Found in far eastern New South Wales, far eastern Victoria, and far south-eastern Queensland. It has been collected from eucalypt forests, often in mountainous situations.

Note. Tvrtković-Šahin (1982) noted the presence of scattered micropapillae on the epicarp, she also remarked on the prominent 'subreticulate pattern of secondary sculpturing' in the non-idioblastic cells.

Three subspecies are recognised.

1. Leaves elliptic, to 12 cm long, woolly below, capitula solitary or clustered
2. Leaves and branches closely woolly; capitula in cymes **12a.** subsp. **elatum**
- 2: Leaves and branches covered with thick wool; capitula solitary on long woolly peduncles **12b.** subsp. **vellerosum**
- 1: Leaves ovate (to elliptic), to 8 cm long, with thin dense tomentum below **12c.** subsp. **minus**

12a. *Coronidium elatum* (A.Cunn. ex DC.) Paul G. Wilson subsp. *elatum*

Illustrations. Fairley & Moore (1989) p. 316, pl. 1155, as *Helichrysum elatum*; Harden (1992), pl. 13, as *Helichrysum elatum*; Walsh & Entwisle (1999) p. 786, Figure 156 e, as *Helichrysum elatum*

Erect *subshrub* to 2 m high. *Branches* woolly or floccose. *Leaves* narrowly elliptic to elliptic, acute, entire or slightly sinuate, lamina to 12 cm long, woolly below, glabrous or sparsely cottony above, petiole slender, 1–2 cm long, woolly. *Capitula* in a compact or open cyme; peduncles 1–5 cm long;

involucre hemispherical, c. 4 cm diam., subtended by linear-acuminate, woolly, herbaceous bracts. Median *involucral bracts* acuminate, to 20 mm long. *Cypselas* cylindrical, c. 2.5 mm long; pericarp crustaceous, dark brown, pitted with numerous narrowly elliptic myxogenic idioblasts c. 0.05 mm long. *Pappus bristles* filiform, persistent as a whole or breaking c. 0.5 mm above persistent base. (Figure 6)

Distribution and habitat. Occurs in coastal extreme south-east Queensland, far eastern and coastal New South Wales, and far south eastern Victoria. It is usually found growing in eucalypt forest, often in mountains.

Selection of specimens of examined. QUEENSLAND: Mt Lindesay, S.L. Everest 1124 (BRI); Fraser Island, C.E. Hubbard 4382 (BRI). NEW SOUTH WALES: near Maquarie Falls, C.W.E. Moore 3414 (CANB). VICTORIA: 11.8 km north-east of Mt Tabby, S.J. Forbes 193 (CANB); mouth of Betka River, 23 Oct. 1948, J.H. Willis s.n. (MEL).

12b. *Coronidium elatum* subsp. *vellerosum* Paul G. Wilson, *subsp. nov.*

Subsp. *elato* aemulans sed ramis crasse lanosis vel floccosis; folii lamina elliptica, acuta, ad 9 cm longa, infra crassi-lanosa, supra sparse lanosa, petiolo gracili 1–2 cm longo; capitulis solitariis, 4–5 cm diam., in pedunculis gracilibus lanosis terminantibus differt.

Typus: Mt Warning, 14 km south-west of Murwillumbah, New South Wales, 19 August 1996, I.R. Telford 12351 & S. Donaldson (*holo:* CANB 9613491; *iso:* NSW *n.v.*, NE *n.v.*).

Differs from subsp. *elatum* as follows: erect subshrub to 1 m high. Branches thickly woolly or floccose. Leaves elliptic, acute, lamina to 9 cm long, with thick wool below, sparsely woolly above, petiole slender, 1–2 cm long, woolly. Capitula on slender woolly peduncles to 10 cm long; involucre hemispherical, 4–5 cm diam. (Figure 7)

Distribution and habitat. Endemic to Mt Warning, far north-east New South Wales, where it grows near the summit on rocky volcanic terrain.

Selected specimens examined. NEW SOUTH WALES: Mt Warning Park, R. Coveny 4313 & J. Armstrong (BRI); Mt Warning, Nov. 1898, W. Forsyth (NSW); Mt Warning, R.W. Johnson 2734 (BRI).

Etymology. The subspecific epithet refers to the dense wool that covers the undersurface of the leaves.

12c. *Coronidium elatum* subsp. *minus* Paul G. Wilson, *subsp. nov.*

Subsp. *elato* aemulans sed foliis lamina ovata vel elliptica, chartacea c. 5 cm longa, infra denso sed tenuiter tomentosa supra glabra vel sparse tomentosa, petiolo gracili c. 1 cm longo.

Typus: Point Lookout, New England National Park, N.S.W., 19 August 1969, I.R. Telford 1149 (*holo:* CANB 029740).

Subshrub to 30–80 cm high. *Branches* with thin dense tomentum. *Leaves* ovate to elliptic, lamina to 8 cm long with a slender petiole 1.5–2.5 cm long, chartaceous, with thin dense white tomentum



Figure 6. *Coronidium elatum* subsp. *elatum*. (Anon., PERTH 00754978), scale = 5 cm.



Figure 7. *Coronidium elatum* subsp. *vellerosum* (R.W. Johnson 2734, AQ 415434), scale = 5 cm.

below, glabrous or sparsely woolly above. *Capitula* solitary or in open panicles; subtending herbaceous bracts linear- acuminate, densely woolly, the inner with scarious narrowly ovate appendage, grading into outer involucre bracts; *involucre bracts* narrowly oblong acuminate, pale white to translucent, the intermediate to 17 mm long. *Style apex* broadly ovate to rounded. *Cypselae* (not seen in mature state) reddish brown, c. 2 mm long; idioblasts present. *Pappus bristles* breaking c. 0.5 mm above persistent base. (Figure 8)

Distribution and habitat. Found in the Northern Tablelands of New South Wales in the New England National Park. The collecting data indicate that the plants were growing in clay loam over basalt in *Nothofagus moorei* forest.

Selected specimens examined. NEW SOUTH WALES: Beech Lookout, New England National Park, D.L. Jones 6027 & C. Broers (CANB); Point Lookout, Great Escarpment, New England National Park, I.R. Telford 10758 (AD, CANB).

Etymology. The subspecific epithet refers to the small size of the leaves compared to those found in subsp. *elatum*.

Notes. Subspecies *minus* has smaller leaves with a thinner and more dense indumentum than is found in subsp. *elatum*; it would appear, however, to grade into the latter subspecies which occurs on the same mountain range but at a lower altitude (*vide* I.R. Telford, pers. com.).

13. *Coronidium telfordii* Paul G. Wilson, *sp. nov.*

Coronidio elato aemulans sed fruticulo 25–80 cm alto, lamina foliorum ovata vel elliptica chartacea ± tri-nervosa, plerumque 3–5 cm longa, infra denso sed tenuiter tomentosa flavido-grisea, supra glabra, petiolo gracili c. 1 cm longo; capitulis solitariis; bracteis involucri anguste oblongis acutis, pallido albis vel translucentiis, intermediis ad 17 mm longis differt; cypselae laevibus, nitidis, idioblastis carentibus.

Typus: Mt Merino, McPherson Range, Qld, 30 September 1973, I.R. Telford 3357 (*holo:* CANB 050131; *iso:* BRI, K *n.v.*, L *n.v.*, NE *n.v.*).

Helichrysum sp. 1., Stanley & Ross, *Fl. South-eastern Queensland* 2: 537 (1986).

Helichrysum sp. (Mt Merino S.T. Blake 21554), *Queensland vascular plants* p. 39 (1994).

Illustration. Nicholson & Nicholson (2004) p. 40 as *Helichrysum* sp. Mt Merino.

Subshrub 25–50(–80) cm high. *Branches* with thin, dense tomentum. *Leaves* ovate to elliptic, lamina 3–5 cm long with slender petiole to 1 cm, chartaceous, ± 3-nerved from near base with thin, dense tomentum below, glabrous above. *Capitula* solitary or in small open panicles, c. 3.5 cm diam.; subtending herbaceous bracts close to capitulum, linear, densely woolly, with scarious, narrowly acuminate appendage, grading into outer involucre bracts; *involucre bracts* narrowly oblong, acute, pale white to translucent, the intermediate to 17 mm long with glandular-stipitate claw. *Style apex* broadly ovate to rounded. *Cypselae* smooth, reddish brown, glossy, c. 1.2–2 mm long; *idioblasts* absent. *Pappus bristles* eventually breaking c. 0.6 mm above base leaving a frayed margin. (Figure 9)

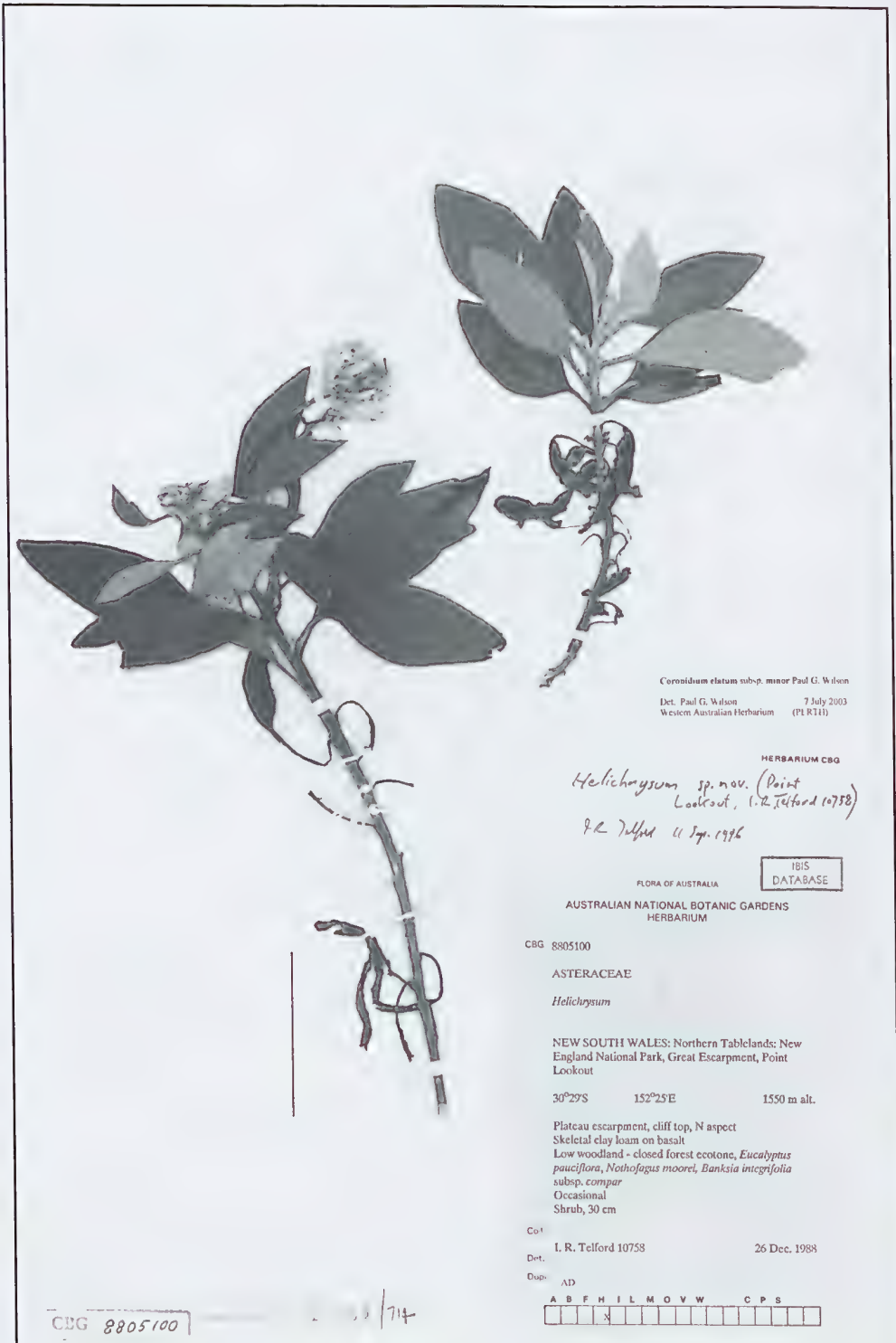


Figure 8. *Coronidium elatum* subsp. *minus*. (I.R. Telford 10758, CBG 8805100), scale = 5 cm.

Distribution and habitat. Found near Mt Merino in the McPherson Range on the New South Wales–Queensland border. The collecting data generally indicate that the plants were growing on rocky ledges at the margin of *Nothofagus moorei* forests.

Selected specimens examined. QUEENSLAND: Mt Merino, McPherson Range, S.T. Blake 21554 (BRI); Roberts Plateau, Nov. 1921, W.D. Francis s.n. (BRI). NEW SOUTH WALES: Tyalgum Ridge, Macpherson Range, L. Haegi 1527 (NSW); near Echo Point, McPherson Range, I.R. Telford 10540 (CANB).

Etymology. The species is named after the botanist Ian Telford, formerly of the Australian National Botanic Gardens and the Australian National Herbarium, who drew my attention to the unique characters possessed by this species. Ian has collected extensively in eastern Australia over many years and has accumulated a wealth of knowledge on the plants of this area and, in this instance, on the *Coronidium* species.

14. *Coronidium lindsayanum* (Domin) Paul G. Wilson, *comb. nov.*

Helichrysum lindsayanum Domin, *Biblioth. Bot.* 89: 670 t. 38 figure 1 (1929). *Type:* ‘Mt Lindsay’, Queensland, 1829, C. Fraser (*lecto* here designated: K, photo seen); ‘Mt Lindsay’, 25 December 1857, W. Hill (*syn:* MEL, NSW).

Helichrysum elatum var. *fraseri* Benth., *Fl. Austral.* 3: 621 (1867) p.p. as to the C. Fraser and W. Hill syntypes. *Type:* ‘Mt Lindsay’, Queensland, 1829, C. Fraser (*lecto* here designated: K, photo seen); ‘Mt Lindsay’, Queensland, W. Hill (*syn:* MEL, NSW).

Illustrations. Leiper (2003) p. 165, back cover, as *Helichrysum lindsayanum*

Low, compact *shrub*. Branches densely woolly, older parts with persistent leaf-bases. Leaves crowded, shortly petiolate, leathery, narrowly elliptic to elliptic, usually recurved on margin, obtuse to acute, apiculate, narrowly cuneate at base, to 5 cm long, felty below, glabrous and glossy above. *Capitula* subsessile to shortly pedunculate, solitary, hemispherical, c. 4 cm diam., subtended by several linear, herbaceous bracts; *capitular bracts* white or pale pink, woolly at base, lamina very narrowly oblong-elliptic, outermost sessile or subsessile, intermediate with semi-terete, glandular-stipitate claws, in all to 20 mm long. *Style* appendage deltoid, c. 0.2 mm long. *Cypsela* c. 2.2 mm long; pericarp pale brown, crustaceous; idioblasts linear, obscure; carpophore tumid; testa membranous. *Pappus* bristles filiform, denticulate, persistent or breaking irregularly near base.

Distribution and habitat. Occurs in the McPherson Range, south-eastern Queensland and north-eastern New South Wales, where it is found growing in the crevices of rocky outcrops.

Selected specimens examined. QUEENSLAND: Campbells Folly, S.L. Everist 1141 (BRI); Mt Maroon, L.S. Smith 12148 (BRI); Mt Ernest, C.T. White 8604 (BRI). NEW SOUTH WALES: ‘Mt Lindsay’ [Mt Lindesay], 11 Nov. 1952, E.F. Constable s.n. (NSW).

Notes. The excluded syntype of var. *fraseri* is a collection made by MacGillivray at Port Curtis; it is also the type of *H. boormanii* var. *gillivrayi* Domin (= *C. lanuginosum*).



Figure 9. *Coronidium telfordii* (E.F. Constable 6569, NSW 100932), scale = 5 cm.

The presumed isosyntypes of var. *fraseri* and of *Helichrysum lindsayanum* in the herbaria MEL and NSW, collected by W. Hill at 'Mt Lindsay', differ from the Fraser collection of this species in their foliage, the leaves being elliptic and flat rather than narrowly elliptic and strongly recurved. They also differ in these characters from Domin's description and illustration of *H. lindsayanum*. However, I am treating all of the syntypes as being conspecific.

The name 'Mt Lindsay' is probably a misspelling for Mt Lindesay; this, according to Telford (1990), is now correctly known as Mt Barney which is on the Queensland side of the McPherson Range. The lectotype of *C. lindsayanum*, that is the C. Fraser collection, matches recent collections from Mt Barney. The syntype collected by W. Hill matches a collection made by E. Constable in 1952 at 'Mt Lindsay', which is probably Mt Lindesay, on the New South Wales side of the McPherson Range (*vide* S. Jacobs, pers. com.).

15. *Coronidium adenophorum* (F.Muell.) Paul G. Wilson, *comb. nov.*

Helichrysum adenophorum F.Muell., *Trans. & Proc. Victorian Inst. Advancem. Sci.* 38 (1855). *Type*: Kangaroo Island, South Australia, March 1851, [?] F. Mueller (*holo*: MEL 2116948).

Illustrations. Jessop & Toelken (1986) p. 1529, Figure 694 A, as *Helichrysum adenophorum*; Walsh & Entwisle (1999) p. 786, Figure 156 c, as *H. adenophorum* var. *adenophorum*.

Erect, single-stemmed *annual or biennial* to 50 cm high. *Stem* glandular-hirsute. *Leaves* sessile, linear, to 6 cm long, glandular-hirsute and scabrous above, with sessile and stipitate-glandular hairs below, margins recurved, apex acuminate, base slightly auriculate. *Capitula* solitary, hemispherical, to 4.5 cm diam., closely subtended by several leafy linear bracts. *Involucral bracts* white (or pink in bud); outer bracts sessile; intermediate bracts narrowly oblong-elliptic, acute, passing into a short, semi-terete, sparsely cottony, glandular claw; innermost bracts shorter, obovate and prominently ciliate. *Style appendage* rounded. *Cypsela* c. 1.5 mm long, oblongoid; pericarp crustaceous, brown, idioblasts broadly elliptic c. 0.05 mm long, myxogenic. *Pappus bristles* filiform, denticulate, smooth towards base, persistent or tardily deciduous intact.

Distribution and habitat. Found on Kangaroo Island and in the Murray region of South Australia, and in western Victoria. Usually growing in heath or woodland where it readily regenerates from seed after fire.

Selected specimens examined. SOUTH AUSTRALIA: Mt Abrupe, Grampians, *A.C. Beaglehole* 30198 (MEL); 3 km S of Kingscote, Kangaroo Island, *T.R.N. Lothian* 804 (AD); 5 km W of Mt Shaugh Conservation Park, 27 May 1992, *S. Ronson* (AD). VICTORIA: south-west of Murrayville, 9 Dec. 1916, *H.B. Williamson* (MEL).

16. *Coronidium waddelliae* (J.H. Willis) Paul G. Wilson, *comb. nov.*

Helichrysum adenophorum F.Muell. var. *waddelliae* J.H. Willis, *Victorian Naturalist* 61: 217 (1945) 'waddellae'. *Type*: Mt Speculation, Victoria, 5000–5400 ft, 1 January 1945, *J.H. Willis* (*holo*: MEL 2116946; *iso*: MEL 658095, MEL 2116947, NSW 519019).

Illustration. Walsh & Entwisle (1999) p. 786, Figure 156 d, as *Helichrysum adenophorum* var. *waddelliae*.

Erect, multistemmed *perennial herb*. Stem glandular-hirsute. *Leaves* sessile, linear, to 5 cm long, sparsely glandular-puberulous above, glandular and white-woolly below, margins slightly recurved, apex acuminate. *Capitula* solitary, terminal to branches, hemispherical, to 4.5 cm diam., closely subtended by several linear, herbaceous bracts. *Involucral bracts* white (or pink in bud); *outer bracts* sessile; intermediate bracts narrowly oblong-elliptic, acute, passing into a semi-terete, sparsely cottony, glandular claw, innermost shorter, obovate and prominently ciliate. *Corolla* turbinate above. *Style appendage* rounded. *Cypsela* c. 2 mm long, oblongoid; pericarp crustaceous, pale brown, densely covered with broadly elliptic idioblasts c. 0.04 mm long, myxogenic. *Pappus bristles* filiform, denticulate, smooth towards base, persistent or tardily deciduous.

Distribution and habitat. Occurs in eastern Victoria and eastern New South Wales. It grows in alpine sites of snowgum woodland and heathland in Victoria and in alpine and subalpine sites in New South Wales.

Selected specimens examined. NEW SOUTH WALES: Kosciuszko National Park, *A.M. Ashby* 3149 (AD); 6 miles [c. 10 km] E of Kiandra, *N.T. Burbidge* 3804 (CANB); Newnes Plateau, *A.J. Whalen* 25 (AD). VICTORIA: Mt Buffalo National Park, 20 Feb. 1963, *J.H. Willis* (MEL).

Coronidium scorpioides group

Style appendage short, truncate. Cypsela: pericarp translucent; idioblasts laterally paired, clear, linear; testa fusiform, brown, epidermal cells linear, straight, not thickened; carpophore very short, apparently one cell thick. Pappus bristles narrowly linear to filiform, denticulate, smooth towards base, ± persistent, breaking irregularly a short distance above base to leave a frayed margin.

17. *Coronidium scorpioides* (Labill.) Paul G. Wilson, *comb. nov*

Helichrysum scorpioides Labill., *Nov. Holl. Pl. Sp.* 2: 45, t.191 (1806); *Gnaphalium scorpioides* (Labill.) Poir. in Lam. & Poir., *Encycl. Suppl.* 2: 808 (1812); *Xeranthemum scorpioides* (Labill.) Poir. in Lam. & Poir., *Encycl. Suppl.* 3: 143 (1813). *Type*: 'in capite Van-Diemen', Tasmania, *J.J.H. de Labillardière* (*iso*: G-DC, microfiche photo seen).

Helichrysum buphthalmoides Sieber ex Spreng., *Syst. Veg.* 3: 484 (1826). *Type*: 'Nov. Holl.', [Near Port Jackson], New South Wales, *F. Sieber* 333, *fide* DC., *op. cit.* 194 (*iso*: G-DC, microfiche photo seen).

Helichrysum rutidolepis DC., *Prodr.* 6: 194 (1838); *Gnaphalium rutidolepis* (DC.) Sch.Bip., *Bot. Zeitung* 3: 171 (1845). *Type*: 'Grassy spots on the banks of Creek, near Port Jackson', New South Wales, April 1824, *A. Cunningham* (*holo*: G-DC, microfiche photo seen).

Helichrysum semipapposum var. *gunnianum* DC., *Prodr.* 6: 195 (1838). *Type*: Tasmania, *R. Gunn* 282, 262 (*syn*: G-DC microfiche photo seen).

Helichrysum gunnianum Hook., *Icon. Pl.* t. 320 (1840); *Gnaphalium gunnianum* (Hook.) Sch.Bip., *Bot. Zeitung* 3: 172(1845). *Type*: Tasmania, *R. Gunn* 502 (?*iso*: MEL, PERTH photo).

Helichrysum erosum Schldtl., *Linnaea* 20: 595 (1847). Type: South Australia, *H. Behr*, n.v.

Helichrysum scorpioides var. *pygmaea* F.Muell., *Monthly Notices, Pap. & Proc. Roy. Soc. Tasmania* for 1870: 14 (1871). Type: 'Alpine summit of Mt Wellington', Tasmania, *Abbott & F. Mueller*, n.v.

Illustrations. Walsh & Entwisle (1999) p. 786, Figure 156a, as *Helichrysum scorpioides*; Figure 156 b, as *H. Rutidolepis*.

Herb, usually rhizomatous. *Stems* erect, simple or sparsely branched. *Leaves* narrowly obovate to linear-acuminate, \pm woolly, with minute globular glands below, decreasing in size upwards. *Capitula* solitary, depressed-hemispherical, woolly at base, not subtended by herbaceous bracts, 1.5–3 cm diam. *Involutal bracts* scarious, transversely wrinkled; outer bracts: claw narrow, flat, woolly-ciliate towards base; *lamina* narrowly obovate, straw-coloured tipped with brown; intermediate and inner bracts: claw semi-terete; lamina narrowly obovate, yellow; innermost bracts with a slender, semi-terete claw and a very narrowly obovate, sometimes lacerate lamina. Some outer florets female. *Corolla* of bisexual florets slender, broadly turbinate above, prominently lobed. *Anther appendage* narrowly ovate. Style arms slender, appendage short, truncate or rounded. *Cypselae*: pericarp translucent with paired, clear, linear idioblasts; testa fusiform, brown, epidermal cells linear, straight, not transversely thickened; carpophore very short. *Pappus bristles* filiform, sparingly denticulate, smooth towards base, \pm persistent or breaking above base to leave a fringed crown. $n = 24$ (Watanabe *et al* 1999: 785).

Distribution and habitat. Occurs in south-eastern South Australia, Victoria, eastern New South Wales, and Tasmania; frequently found in open woodland but also growing in many other habitats.

Selected specimens examined. SOUTH AUSTRALIA: Emu Flat, Ninety Mile Desert, *W. Gill* 230 (MEL). NEW SOUTH WALES: Tinderry Mountains, *G. Stewart* 300 (PERTH). VICTORIA: Brodribb Forest, Bonang District, *E.A. Chesterfield* 696 (PERTH). TASMANIA: 7 km NE of Huonville, *F.E. Davies* 796 (PERTH).

Notes. Haegi (1986) described *H. scorpioides* as being tap-rooted and as having only bisexual florets, while he described *H. rutidolepis* as being rhizomatous and as having female peripheral florets that had only a rudimentary pappus or the pappus completely lacking. In Costin *et al.* (2000) *H. scorpioides* is described as having branched rhizomes. Those herbarium specimens examined by me in which the subterranean parts were apparent have been rhizomatous, while all mature capitula examined had some of the outer florets female and these all had a pappus. Curtis (1963) described *H. scorpioides* as having a long slender rhizome in Tasmania, and in Labillardière's description of the type specimen, which came from the south coast of Tasmania, he noted that the outer florets were female and these he illustrated as having a pappus.

Reports on the study of *C. scorpioides* s. lat. from various localities were published by Salkin (1990, 1998) and by Barker (2004); the conclusions reached by these investigators were that a number of taxa are involved. Although it seems probable that several taxa should be recognised I consider that their discrimination would be best carried out by someone with field knowledge of the plants.

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References

- Anderberg, A.A. (1991). Taxonomy and phylogeny of the tribe Gnaphalieae (Asteraceae). *Opera Botanica* 104: 1–195.
- Barker, J. (2004). *Helichrysum rutidolepis* (form from Oberon, NSW). *Australian Daisy Study Group Newsletter* 68: 3–4.
- Bayer, R.J., Greber, D.G. & Bagnall, N.H. (2002). Phylogeny of Australian Gnaphalieae (Asteraceae) based on chloroplast and nuclear sequences, the *trnL* intron, *trnL/trnF* intergenic spacer, *matK*, and *ETS*. *Systematic Botany* 27: 801–814.
- Bentham, G. (1867). *Flora Australiensis*. Vol. 6. (Lovell Reeve & Co.: London.)
- Brown, R. (1817). Some observations on the natural family of plants called Compositae. *Transactions of the Linnean Society of London* 12: 76–142.
- Candolle A.P. de (1838). *Prodromus systematis naturalis regni vegetabilis, sive enumeratio contractaordinum, generum, specierumque plantarum ... Pars sexta*, pp. 169–193. (Treuttel et Wurtz: Paris.)
- Costin, A.B., Gray, M., Totterdell, C. & Wimbush, D. (2000). *Kosciuszko alpine flora*. (CSIRO: Collingwood, Vic.)
- Curtis, W.M. (1963). *The student's flora of Tasmania*. Pt 2, pp. 328–329. (Government Printer: Tasmania.)
- Drury, D.G. (1970). A fresh approach to the classification of the genus Gnaphalium with particular reference to the species present in New Zealand (Inuleae-Compositae). *New Zealand Journal of Botany* 8(2): 222–246.
- Fairley, A. & Moore, P. (1989). *Native plants of the Sydney district*. (Kangaroo Press: Kenthurst, NSW.)
- Galbany-Casals, M., Garcia-Jacas, N., Susanna, A., Sáez, L. & Benedi, C. (2004). Phylogenetic relationships in the Mediterranean *Helichrysum* (Asteraceae, Gnaphalieae) based on nuclear rDNA ITS sequence data. *Australian Systematic Botany* 17: 241–253.
- Haegi, L. (1986). *Helichrysum*. In: Jessop, J.P. & Toelken, H.R. (eds), *Flora of South Australia*. Pt III, pp. 1531–1532. (Government Printer: Adelaide.)
- Harden, G.J. (ed.) (1992). *Flora of New South Wales*. Vol. 3. (New South Wales University Press: Kensington., NSW.)
- Hilliard, O.M. & Burt, B.L. (1981). Some generic concepts in Compositae-Gnaphalinae. *Botanical Journal of the Linnean Society* 81: 233–265.
- Jessop, J.P. & Toelken, H.R. (1986). (eds) *Flora of South Australia*. Part III. (Government Printer: Adelaide.)
- Leiper, G. (2003). Mountain heaths of southeast Queensland. *Australian Plants* 22(177): 163–170.
- Lindley, J. (1839). *A sketch of the vegetation of the Swan River Colony*. (James Ridgway: London.)
- Maiden, J.H. & Betche, E. (1916). A census of New South Wales plants. (Government Printer: Sydney.)
- Mueller, F. (1895). A new genus of helichryroid Compositae. *Botanisches Centralblatt* 65: 445.
- Nicholson, N. & Nicholson, H. (2004). *Australian rainforest plants VI* (Hugh & Nan Nicholson: Lismore: NSW.)
- Pearson, S. & Pearson, A. (199–). *Plants of central Queensland*. (Society for Growing Australian Plants: [Sydney].)
- Puttock, C.F. (1994). Anatomy and morphology of *Cremnothammus* (Asteraceae), a new genus for *Helichrysum thomsonii*. *Australian Systematic Botany* 7: 569–583.
- Salkin, E. (1990). *Helichrysum scorpioides* / *H. rutidolepis* complex. *Australian Daisy Study Group Newsletter* 26: 5–8.
- Salkin, E. (1998). *Chrysocephalum semicalvum* subsp. *semicalvum* revisited. *Australian Daisy Study Group Newsletter* 52: 39–40.
- Telford, R.H. (1990). Moving mountains – Allan Cunningham and the mountains of southern Queensland. In: Short, P.S. (ed) *History of systematic botany in Australasia*. p. 157. (Australian Systematic Botany Society: South Yarra, Vic.)
- Tvrtković-Šahin, E.E. (1982). *The systematics of the genus Helichrysum Miller in the countries bordering the Mediterranean*.

Unpublished thesis, Dept of Botany, University of Reading.

- Tzvelev N.N. (1990). Zametki o nekotorykh slozhnotsvetnykh (Asteraceae) evropeiskoi hasti SSSR. (Notae de Asteraceis nonnullis partis europaeae URSS.). *Novosti sistematiki vysshikh rastenii*. 27: 145–152.
- Walpers, G.W. (1841). Compositarum novarum decas tertia. *Linnaea* 14: 503.
- Walsh, N.G. & Entwisle, T.J. (eds) (1999). *Flora of Victoria*. Vol. 4. (InkataPress: Melbourne.)
- Watanabe, K., Short, P.S., Denda, T., Konishi, N., Ito, M. & Kosuge, K. (1999). Chromosome numbers and karyotypes in the Australian Gnaphalieae and Plucheae (Asteraceae). *Australian Systematic Botany* 12: 781–802.
- Wilson, Paul G. (1992). The classification of some Australian species currently included in *Helipterum* and *Helichrysum* (Asteraceae: Gnaphalieae): Part 3 *Anemocarpa* and *Argentifolium*, two new genera from Australia. *Nuytsia* 8: 447–460.